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THE COST OF FEDERAL MONEY, HELLS CANYON, AND ECONOMIC EFFICIENCY

PART I

OTTO ECKSTEIN AND JOHN V. KRUTILLA*

THE application of economic efficiency criteria to public expenditure is beset with many difficulties. Objectives for which public expenditures are made are rarely confined to economic considerations; a calculus of prices and quantities often founders on an inability to define measurable units of benefit. Costs are somewhat more specific. Because resources employed in a public undertaking have alternative uses in the production of marketable commodities, they have a price which reflects their opportunity cost. The cost of public funds, however, cannot be inferred directly from borrowing costs, since the funds are raised by taxation. Yet, in considering the problem of public expenditures in the context of economic efficiency, the social cost of tax raised funds must be estimated. Since a systematic empirical investigation of this problem is not anywhere available, this paper advances a method for determining such costs. We then employ the results in an analysis of one of the more interesting recent cases involving the possibility of public expenditures.

Few investments in recent years have precipitated more controversy than the development of the Hells Canyon Reach of the Snake River. A public and a private group contended for the privilege of developing the Hells Canyon—the Bureau of Reclamation of the U.S. Department of the Interior and the Idaho Power Company. Both the benefits and the costs to society of the alternative plans are predominantly economic, in this case, and largely measurable by conventional techniques. Yet, at no time during the long controversy was an adequate analysis of the relative economic merit of the two plans available to the public. At this stage, a study of the economic efficiency of rival plans for the development of Hells Canyon cannot influence that particular decision. However, we examine the relevant economic considerations in the belief that they have significant implications for public expenditures in general, and for the developmental decisions in the water resources field in particular.

* The authors are, respectively, Assistant Professor, Department of Economics, Harvard University; and a member of the staff of Resources for the Future. This paper is based on Chapters IV and V of the study by the authors, *Multiple Purpose River Development: Studies in Applied Economic Analysis*, to be published for Resources for the Future by The Johns Hopkins Press.

Let us anticipate our results in this particular case to this extent. There is no clear-cut evidence that either of the two plans for Hells Canyon would be "efficient" in the economist's sense of the word. The High Dam, proposed by the Bureau of Reclamation, would qualify only if an interest rate for public investment could be justified that would be substantially lower than our estimated social cost of federal funds. On the other hand, impediments exist to efficient development as a private venture, entirely apart from differences in imputed interest rates under public and private development.

Perhaps the most significant differences between the federal plan for one very large dam and the private plan for three much smaller dams lie in the absolute size of the investment, in the time required before full use could be made of the new capacity, and in the capital-intensity of the technology employed. All three of these issues, at least in part, turn on the interest rate used for planning. In a perfectly competitive capital market, in which firms, households, and governments could borrow at a uniform rate, this going interest rate could be applied as an efficiency criterion. But the wide diversity of borrowing and lending rates in our economy precludes so simple a technique. To measure the social cost of federal capital, we need to know the sources of the funds and their value if used for other purposes, and similarly for private financing. Given the different forms of financing and the different opportunity costs of capital, the alternative plans can be evaluated on the basis of their net benefits. Such a test is applied in this study.

In Part I of this paper, we estimate the opportunity cost of federal funds raised by taxation. This interest cost figure is of relevance to other water resource projects, to public investments in such fields as housing, roads and military construction, to the management of the vast inventories of the Defense Department, to the finances of the highway trust fund, the charges for postponed tax collections, and to similar problems. Part II, which will appear in the next issue of this *Journal*, will analyze the alternative plans for development for Hells Canyon, using this interest rate, and will present the policy conclusions that are suggested by our study.

I. *The Social Cost of Federal Funds*

The opportunity cost of federal expenditures directly depends on the condition of the national economy. For this study, we assume full employment —to be maintained through successful stabilization policies—because the Hells Canyon project was planned and justified by both sides to the dispute under this condition. In this setting, the funds for a government program can come from three sources: an increase of taxes, borrowing offset by tightened monetary policy, or a decline of other federal expenditures. Our attention is focused on financing through tax increases, because this possibility seems most realistic. A tighter money supply may be used as a short-run offsetting stabilizer, but before very long—as a result of the political desire for budget-balancing and the needs for monetary policy to counteract other inflationary pressures—a monetary offset probably would be converted into a fiscal offset. Compensating declines of other federal programs are possible, but since federal programs tend to move together, rather than at the expense of each other, we

make no attempt to estimate the opportunity cost of this form of financing.

Our estimate of the cost of financing is derived from an estimate of the incidence of marginal tax dollars. This requires quantitative study of the revenues produced by different taxes, the persons and organizations that pay these taxes, and the extent to which taxpayers are able to shift their tax liabilities. It also requires that we assume how taxes would be increased were the Hells Canyon program to be expanded, or which ones would be cut in the event of contraction.

When government imposes taxes in order to finance public investments, it levies a compulsory loan or forced saving on the community. The taxes, thus, lead to either a reduction of consumption by households, a decline in private investment, or both. Investments, foregone because of taxes, would have yielded a certain rate of return to the community which would have increased the future flow of real national income. The social cost, therefore, is equal to the foregone rate of return on private investments. The social cost of funds which would have been spent for consumption can be estimated by studying the saving and borrowing behavior of households.

Each individual has certain preferences about consumption in different periods of time. If he postpones consumption, he earns interest on the resultant saving; if he repays outstanding debts, he reduces his interest payments. A rational consumer will allocate his expenditures over time so that the rate at which he foregoes present consumption for an income stream made possible by the resultant increase of his saving will equal the interest rate which he faces in making this choice. Thus, a saver will push his consumption to the point where the satisfaction of a future income stream equal to the interest rate he can earn is exactly equal to the satisfaction he derives from the marginal dollar of consumption. Similarly, a borrower will derive satisfaction from his marginal dollar of consumption equal to the stream of interest payments he must make on this marginal expenditure dollar which he has borrowed.[1]

Much of consumer borrowing is for the purchase of durables before sufficient cash can be set aside to pay for them; all mortgages and most instalment paper fall in this category. Such borrowing, in a sense, is for investment rather than consumption, for in each instance there is an asset which yields a return to the owner. This return may be monetary; a house, for example, reduces rent payments. It may be labor-saving, or in the form of enjoyment of consumption through use of the durable. But whatever the nature of the return, a rational consumer will only borrow at a given interest rate if his enjoyment of the return is at a rate at least as great as his interest payments. Thus, a person who is willing to pay 12 per cent interest on the purchase of a car on credit, or a homeowner paying 5 per cent on the mortgage on his house, presumably is enjoying satisfaction from these

[1] The indifference map describing this phase of consumer behavior has "consumption this year" on one axis, "additions to annual future income" on the other. The budget line has a kink at the point where consumption this year equals income because of the gap between borrowing and lending rates.

This formulation does not detail the intertemporal optimum conditions between all present and future periods, and, hence, cannot describe the entire future profile of an individual's consumption. It is sufficiently detailed for our limited purposes, however, and we seek to keep our assumptions as simple as possible. The same reasoning can be applied to the rate of substitution of consumption expenditures between any two periods, provided the entire structure of future interest rates is also known for the individual.

assets at rates at least equal to these figures.

In order to determine the social cost of funds raised through taxation of an individual with given preferences about his saving-borrowing behavior, we must ascertain the interest rates which he faces. A dollar of taxation is a reduction of his current income. If we can assume that the marginal dollar an individual spends for present consumption, or the dollar he saves, would be worth a future annual income stream equal to his interest rate, then the same interest rate would apply to the dollar required to pay an increase in taxes. Conversely, a tax reduction of a dollar can be converted into a future income stream equal to his interest rate. Our analysis does not assume that all of the taxed money would have been saved voluntarily; presumably part of it would have been consumed. We assume only that the decision about the fraction to be saved is made rationally and in the light of the opportunities for changes in future income which the interest rate measures. These assumptions are sufficient to derive the value of marginal income in terms of a future stream which can be expressed as an interest rate. We can then apply this reasoning to marginal changes of income which are caused by taxation.[2]

A further requirement for the estimate of the social cost of marginal tax dollars is to discover how these dollars are apportioned among the major categories that face different interest rates. This means allocation of the taxes between businesses and households, between borrowers and lenders, between borrowers at high rates and borrowers at moderate rates, and so on. For households, we use three categories—lenders, borrowers at mortgage rates, and borrowers at short-term credit rates—combined with a breakdown by income class. In the case of business, we estimate the effect on investment and its potential return, in accordance with the size of assets of the taxpaying firms.

Our analysis necessarily is confined to small changes in expenditures and taxation, relative to the over-all levels of the federal budget. Large tax changes, such as a 30 per cent reduction in income taxes, would lead to such substantial shifts in consumers' decisions and in the returns of business that assumptions of the present relationships between incomes, prices, interest rates, and rates of return would no longer be valid. There might be effects on consumers' incomes which would convert borrowers into savers, effects on the total amount of saving and of investment which might alter and shift the interest rate structure, and changes in the relative prices of consumer goods and capital goods which would result in a shift from investment to consumption in the private sector. Since all of water resource development absorbs little more than 1 per cent of the federal budget, any tax changes made possible by changes in this program would be so small as to be truly marginal.

As with other criteria of economic efficiency, our measure abstracts from changes in the distribution of income. We view the public investment as a loan by society to itself in order to build certain physical investments. That is, we assume that it does not matter to whom benefits and costs accrue. In fact, much of the cost is usually borne by individuals who do not benefit di-

[2] For a formal derivation of our model, see John V. Krutilla and Otto Eckstein, *Multiple Purpose River Development: Studies in Applied Economic Analysis* (Baltimore: The Johns Hopkins Press, in press), Appendix I.

rectly from the investment, so that the distribution of income is changed. And, if we attach a different value to a dollar of cost or benefit for different groups, our efficiency measure would need to be modified. In the present context, the value of the addition of a dollar to the future income stream is assumed to be the same for all taxpayers and beneficiaries. Insofar as our interest is focused on the increase in total national income and on the efficiency of particular programs in promoting this objective, this assumption serves as a means of separating this facet of the problem from redistributive issues.

Our quantitative analysis could be presented, with no substantive difference, either as an expansion of investment and a tax increase or as a contraction of investment and a tax cut. It is the change in taxes which is significant; it does not matter whether the public investments would increase existing taxes or prevent a possible reduction. Since the actual policy issues have been in terms of tax reductions in recent years, we consider the problem from this point of view.

In order to measure the cost of capital for a wide range of taxes, we present two models using different sets of assumptions about the potential tax cuts which are forestalled by the public investments. In Model A we assume that the personal income tax is reduced in a manner most advantageous to low-income families and that sales taxes are lowered. These tax cuts would primarily boost consumption. Model B consists of a reduction of the personal income tax with emphasis on upper-income brackets, combined with a reduction of the corporation income tax. This model would increase investment.

By assuming a successful government stabilization policy, we do not mean that full employment and stable price levels prevail constantly; but only that neither major unemployment nor a severe inflation is allowed to develop. This assumption accords both with the avowed objectives of the government and with the general setting assumed for federal resource development programs, and it corresponds with the record of recent years. Most of the data for our quantitative analysis are based on the year 1955, a year in which employment was high and prices stable, and the money supply was kept moderately tight.

In this context, a specific government expenditure must be offset by some weapon in the arsenal of the stabilizers. It is this reasoning which forces us to derive our estimates of social cost on the basis of specific counteracting fiscal or monetary policies.[3]

A few precautionary comments should be made about our general assumptions. We take it as axiomatic that a measure of the social cost of capital which is consistent with our approach to general efficiency must accept the sovereignty of consumers' choice, even in matters of al-

[3] Thus, our procedure measures what Musgrave calls the "differential incidence" of expenditures. See R. A. Musgrave, "General Equilibrium Aspects of Incidence Theory," *American Economic Review*, May 1953, pp. 504-17. A reduction of expenditures by $1.00 may require an offsetting tax cut of less than $1.00, because the multiplier effects of the former may exceed the effects of tax reduction (See H. C. Wallich, "Income-Generating Effects of a Balanced Budget," *Quarterly Journal of Economics*, 1944, pp. 78-91). In our quantitative study, we assume that the fiscal authorities reduce taxes by the appropriate amount, i.e., an amount sufficient to result in the utilization of a bundle of resources equal to the quantity released by the reduction of expenditures. Thus, we assume constancy of effective demand. We also assume that our result is not affected by any redistributions of income attributable to the multiplier effects of the two offsetting changes in the budget.

location of expenditures over time, and particularly with regard to their decision on how much to consume and how much to invest. It has been widely argued that consumers' sovereignty should be rejected for intertemporal choices because of the myopia of individuals,[4] which leads to inadequate amounts of saving and investment for society as a whole from a long-run point of view. It has also been contended that it is not the function of government slavishly to follow individual desires, but to act for unborn generations, to take the lead in providing for the future. We do not reject these arguments. But we take the view that economic efficiency, based on the subjective valuations of the individuals who constitute society, is one of the significant criteria which policy-makers should consider.[5]

II. Model A: A Tax Cut Stimulating Consumption

Our first tax model estimating the social cost of capital consists of reductions which are particularly favorable to low-income families. In Model A, 80 per cent of the tax cut is in the form of an increase in the personal exemption of the federal income tax. The other 20 per cent is assumed to go into a reduction of those federal excises which would, in fact, be most likely to take place. When our computations for each of these tax cuts are completed and the results combined, we arrive at the following applicable interest rates:

	Per Cent
Increased personal exemption	5.87
Reduced excises	5.49
Weighted average Model A	5.79

Increasing the Exemption of the Personal Income Tax. A tax cut in the form of a higher personal exemption frequently has been proposed in Congress. Assuming that the income tax liabilities are not shifted, it is easy to compute the incidence of the tax cut by income classes, given the distribution of exemptions and the typical marginal tax rates. The distribution of the tax reduction, as given in Table I, is favorable to low-income classes—the group with incomes of $5,000 or less. Of the 39.9 per cent accruing to the very broad top-income class—incomes over $5,000—considerably more than half goes to taxpayers with gross incomes of $5,000 to $7,500.

Discovery of the rates at which each income class saves or borrows requires examination of its asset and credit position. Columns 1, 3, and 5 of Table I show, for each income class, the percentage of spending units having a significant amount of short-term consumer debt and mortgages. To derive the interest rates on which consumers make their marginal borrowing-saving decisions, we estimate the rate of return earned on their assets and the rates paid on their debts.

The rates summarized in Table I have been derived in the following manner.

[4] M. Dobb, *On Economic Theory and Socialism* (New York: International Publishers, 1955), pp. 38-41, 73-77, 244-45, 258-260; A. C. Pigou, *The Economics of Welfare* (4th ed.; London: Macmillan Co., 1932), pp. 22-30; W. J. Baumol, *Welfare Economics and the Theory of the State* (Cambridge: Harvard University Press, 1952), pp. 91-92; and R. N. Strotz, "Myopia and Inconsistency in Dynamic Utility Maximization," *Review of Economic Studies*, Vol. 23, No. 62, 1956, pp. 165-180.

[5] For further discussion of this point see Otto Eckstein, *Water Resource Development: The Economics of Project Evaluation* (Cambridge: Harvard University Press, in press) Ch. 4, where it is argued that the conservation aspect of this program calls for a low interest rate for project design, but that benefits should well exceed costs to prevent the low interest rate from becoming a means of justifying submarginal projects.

The assumed interest paid on the assets held by those households which are debt free is 3 per cent, a rate typical of the savings accounts and U. S. government bonds into which most households in the lower income brackets put their savings. Since 15 per cent of the class with incomes above $5,000 [6] receive a rate of 8 per cent on stock holdings (which we discuss further below), the 3 per cent is adjusted to 3.75. A rate of 5 per cent is applied to mortgage loans. This is somewhat above the rate charged on loans guaranteed in 1955, but corresponds to rates on conventional first mortgages and allows for the considerably higher rates which prevail on second mortgages.[7] As for interest on short-term consumer credit, rates vary widely, from less than 6 per cent on some personal bank loans (and 0 per cent on loans within families) to over 30 per cent on some small loans of finance companies. This range can be narrowed by studying the composition of personal debt. Of the $36 billion outstanding at the end of 1955, $14 billion was automobile paper.[8] The rates of most automobile paper were between 8 and 12 per

TABLE I

THE AVERAGE INTEREST RATE APPLICABLE TO THE DISTRIBUTION OF TAX SAVINGS FROM INCREASING PERSONAL EXEMPTION, BASED ON DISTRIBUTION OF SPENDING UNITS BY INCOME CLASS, ASSET-DEBT POSITION, AND MARGINAL BORROWING OR LENDING RATES OF INTEREST

Item	Family Income Class					
	$0 to $3,000		$3,000 to $5,000		Over $5,000	
	(1) Per Cent of Units [a]	(2) Interest Rate [b] (per cent)	(3) Per Cent of Units [a]	(4) Interest Rate [b] (per cent)	(5) Per Cent of Units [a]	(6) Interest Rate [b] (per cent)
Owed more than $100 of consumer debt	33	12.0	52	8.3	52	7.3
Owed mortgages only	5	4.0	8	3.9	11	3.5
Owed neither kind of debt	50	3.0	40	3.0	37	3.2
Unable to borrow at reasonable rates [b]	12	12.0	..	..	..	..
Average rate for each income class	..	7.0	..	5.8	..	5.4
Percentage distribution of tax saving [c]	19.5		40.6		39.9	
Average applicable interest rate	..	...	..	..	..	5.87

[a] Source: 1956 Survey of Consumer Finances, "Consumer Indebtedness," *Federal Reserve Bulletin*, July 1956, p. 702.

[b] See text.

[c] Based on U. S. Treasury Department, Internal Revenue Service, *Statistics of Income, 1951.*

[6] 1955 Survey of Consumer Finances, "The Financial Position of Consumers," *Federal Reserve Bulletin*, June 1955, p. 621.

[7] This rate corresponds to the findings of Morton for 1947. See J. E. Morton, *Urban Mortgage Lending Experience*, National Bureau of Economic Research (Princeton: Princeton University Press, 1956), pp. 80-81.

[8] U.S. Department of Commerce, *Survey of Current Business*, March 1956, p. S-16.

cent, with that held by banks near the lower figure and by finance companies near the higher one. Another $6 billion was for other consumer goods paper, costing comparable rates. Personal loans constituted $8 billion. Of these, the small loans which bore very high rates were offset to some degree by low rates on bank loans available to the best of the credit risks. Of the remaining, about half were charge accounts and the rest were service credit and repair and modernization loans. The rates on these categories tended to be relatively low, ranging from 6 per cent on regular charge accounts to 9 per cent on modernization loans. The average rate for personal debt suggested by these figures is about 10 per cent. It would be incorrect, however, to assume that all income classes pay the same kind of rates. Generally, poorer people obtain small loans at very high rates and borrow from sales finance companies for their durable goods purchases; those with higher incomes are able to obtain bank loans and have charge accounts. To allow for this factor, we assume a rate of 12 per cent for consumer credit in the lowest income class and a rate of 9 per cent for the rest.

Interest payments are deductible from federal income taxation. This implies that the actual interest rate which governs the choice of consumers is not the rate paid, but the rate adjusted for the saving in taxes. However, the applicability of this reasoning is limited by the wide use of the standard deduction in income tax returns. Itemized deductions were made on only 8 per cent of the returns for incomes of $3,000 or less, 24 per cent for $3,000 to $5,000, and 40 per cent for $5,000 and over. Because the tax saving from this source is usually more significant in the case of mortgages, we use the borrowing rate after taxes only in the case of households with mortgages.

Interest receipts—in contrast to interest payments—are taxable income, which again argues for the use of interest rates after taxes. But the amounts of interest received are relatively small for most households and frequently are not reported to the tax collectors. Only 7 per cent of returns with incomes below $5,000 and 20 per cent with higher incomes reported interest receipts.[9] Therefore, we use the before-tax interest rates except for half of the interest recipients in the top-income class.

Our set of categories for assigning interest rates to households does not properly describe one group in the debt-free households. The fact that the largest percentage of debt-free families is in the lowest income class does not mean that low-income families have less need for credit. Rather, many of these families are not sufficiently good credit risks to get any loans except small loans at very unattractive terms. It would be fallacious to assume that families in this group base their borrowing-saving decisions on a rate of 3 per cent. For a sizable group of low-income families, the lack of the use of credit can be explained on other grounds. Unskilled workers are heavily represented; because their income reaches a peak relatively early in life, they have relatively little inducement to borrow. Still other low-income families consist of older people who are living on their capital; they also have no incentive to borrow. To take account of the group who wants credit but is too

[9] U.S. Treasury Department, Internal Revenue Service, *Statistics of Income for 1952, Preliminary Report*. These figures include returns reporting miscellaneous income on the federal income tax Form 1040A. We apply after-tax interest rates to one half the interest recipients in the top class because that is the degree of compliance suggested by our asset-debt data of Table I.

poor to obtain it, we assume that 20 per cent of the non-borrowers have a high time-preference and, if they were free to do so, would make use of short-term consumer credit at the usual rates of 12 per cent.

Columns 2, 4, and 6 of Table I give the rates for interest payments of families with low, middle, and high incomes, derived as we have indicated, with adjustments for taxes incorporated in the figures. Those who owe both consumer debt and mortgages are considered to be paying the higher borrowing rate (that for consumer debt), which is the rate that must be considered marginal. Low-income families unable to borrow at reasonable rates are listed separately. The table also gives the average rate for each income class and the distribution of tax savings caused by an increase of the personal exemption. The final figure, which is computed by weighting the average rates applicable to the three income classes by their share of tax savings, is equal to 5.87 per cent.[10] This is the rate which our quantitative analysis suggests as the proper measure of value to consumers of the tax savings made possible by an increase in the exemption of the personal income tax.[11]

Reducing Selected Excise Taxes. In addition to the increase in personal exemption, amounting to 80 per cent of the tax cut, our Model A calls for a 20 per cent cut in federal excise taxes. We assume a reduction for only those commodities which seem likely to be affected by a move to cut excise taxes. Thus, all road user taxes are excluded because they have been earmarked for the Highway Program; taxes on alcoholic beverages and tobacco are ruled out because they are imposed, in part, for noneconomic reasons and have a long-accepted place in the federal revenue structure. We treat the remaining excises as if they were cut proportionately, and assume the incidence to fall on the consumer.[12] The incidence by income classes then depends upon the distribution of the tax cut among commodities and on their income elasticity. Table II lists the major

[10] The use of income classes as defined by the Internal Revenue Service in combination with the definitions of the Survey of Consumer Finances introduces a slight upward bias into the estimate. The Survey's "spending unit" includes all related persons living together who pool their incomes, while the Internal Revenue Service gives its figures in terms of tax returns. Since some spending units will file several tax returns, relatively fewer spending units will fall into our lowest income class. This bias is accentuated by the fact that our tax data pertain to 1951, when incomes were lower than in 1955. Data for the distribution of income from the two sources suggest that as many as one-half of the returns filed in the lowest income class in 1951 should be assigned to "spending units" in the next income class in 1955. Similarly, the data suggest that one-third of all returns filed in the middle income class in 1951 belonged to "spending units" in the highest class in 1955. On these assumptions, our estimate for the interest rate would fall to 5.70 per cent. This probably overstates the bias since the Survey's sample appears to underrepresent low-income "spending units."

[11] Our analysis has not endeavored to impute a rate of return to the investments made possible by the increased savings of consumers. Presumably, a return greater than the borrowing cost is earned on these investments, which serves as an inducement of the investor. An estimate of this extra return requires identification of the marginal borrowers to whom these investible funds would be made available, a task we shall not assay. Were we to assume that the return above borrowing cost is 3 per cent, a liberal figure in view of the low- and middle-income sources of these savings and the channels into which their savings usually flow, and were we to apply marginal propensities to save by income classes (see footnote d to Table VI) to estimate the share of the tax cut that would be saved, we would increase our estimate by .12 percentage points, resulting in a figure of 5.99 per cent.

[12] Musgrave and Tucker followed this assumption in their studies of tax incidence. See R. A. Musgrave, J. J. Carroll, L. D. Cook, and L. Frane, "Distribution of Tax Payments by Income Groups: A Case Study for 1948," *National Tax Journal*, March 1951; and R. S. Tucker, "Distribution of Tax Burdens in 1948," *ibid.*, September 1951. This assumption is only a first approximation and overlooks the effects of product substitution.

federal excises and their revenues, and gives estimates of the income elasticities of the commodities prepared by the U.S. Department of Commerce. Using the distribution of taxes as weights, an average income elasticity is computed for the tax cut. Both the prewar and postwar figures produce an estimate very close to 1.0, which implies an incidence of the taxes among income classes similar to the distribution of income.[13]

III. *Model B: A Tax Cut Stimulating Investment*

In Model B, we assume that 50 per cent of the federal tax reduction will provide for proportionate cuts of personal income tax payments, thus lessening the degree of progression in the rate structure. The remaining 50 per cent is assumed to take the form of a proportionate cut in corporation income taxes.

TABLE II

EXCISE TAXES AND INCOME ELASTICITIES FOR SELECTED GOODS AND SERVICES

Commodity	Tax Revenue [a] (million dollars)	Per Cent of Tax Revenue	Income Elasticity [b]	
			1929–40	1947–54
Musical instruments and radios	248	12.3	2.5	1.1
Records	8	.4	2.5	1.1
Appliances	107	5.3	1.3	0.3
Cameras	15	.7	1.5	0.6
Jewelry	142	7.1	1.8	0.3
Furs	27	1.3	1.5	1.5
Toiletries	72	3.6	0.8	0.5
Luggage	51	2.5	1.1	1.3
Admissions	189	9.4	0.8	−0.4
Telephone	520	25.9	0.5	1.7
Transportation	632	31.4	1.1	1.1
Average elasticity	...	...	1.15	1.00

[a] Source: U. S. Treasury Department, *Treasury Bulletin*, March 1956. Figures are for fiscal 1955.

[b] Source: U. S. Department of Commerce, "Consumer Expenditure Patterns," *Survey of Current Business*, September 1955, pp. 23-32.

Table III shows the distribution of family income and the interest rates applicable to the tax saving in each class. The average interest rate is obtained by weighting the rates of the income classes by the distribution of the excise tax cut. This rate is 5.49 per cent.

[13] Rolph has put forth the view that factors of production bear the cost of excise taxes through backward shifting. Our computation is consistent with this assumption if the changes in factor payment are proportional, for this will distribute the tax saving among income classes in accordance with the distribution of income. See E. R. Rolph, "A Proposed Revision of Excise Tax Theory," *Journal of Political Economy*, April 1952, pp. 102-17.

Combining the interest rates applicable to each of these tax cuts, we derive our over-all estimate for Model B, as follows:

	Per Cent
Proportionate reduction of personal income taxes	5.29
Proportionate cut in corporation taxes	5.59
Weighted Average Model B	5.44

Reducing Personal Income Tax Liabilities Proportionately. Much of the method applied in Model A can be used for the personal income tax cut favoring

upper-income families. The distribution of this type of tax savings among income classes is given in column 4 of Table VII. Comparing the incidence of this tax cut with the incidence of Model A's increase in the exemption, we find that much more of it accrues to high-income classes—59 per cent of it to incomes over $7,500. Where Model A emphasized the asset-debt position of families with low and middle incomes, for whom the Survey of Consumer Finances provides good coverage, Model B must give much more detailed estimates for higher incomes. But a somewhat different approach is required for the upper-income groups. In the lower brackets, the diversity of interest rates is primarily explained by the presence or absence of debt and by the kind of debt owed; in the upper brackets, it is the form of the assets from which income is derived and the rates at which such income is taxed which are critical variables.

Table IV presents the asset-debt position of households with incomes greater than $5,000. It shows a wide prevalence of debt, which results from lumping all incomes above $10,000 into one bracket. Since debt for consumption purposes falls rapidly in the higher brackets, in our subsequent analysis the figures for the bracket over $10,000 are applied only in the range $10,000 to $15,000. Also, in the higher brackets, the relevance of the borrowing rate ceases, because the rate of return on assets increases while the borrowing cost falls, until at some point on the income scale the borrowing rate is no longer marginal. When that level of income is reached, consumer credit is likely to be in the form of charge accounts owed as a matter of convenience, and mortgages held —in part—to raise funds for investment purposes.

Table IV also shows the interest rates applicable to debtors in these income

TABLE III

REDUCTION OF SELECTED EXCISE TAXES: DISTRIBUTION OF INCOME AND APPLICABLE INTEREST RATES, 1955

Family Income Class (thousand dollars)	Family Personal Income [a] (billion dollars)	Per Cent Distribution Before Tax	Per Cent Distribution After Tax [b]	Applicable Interest Rate [c] (per cent)
0 to 3	25.0	9	10	7.0
3 to 5	59.1	21	22	5.8
5 to 7.5	81.6	28	28	5.8
7.5 to 10	47.1	16	16	5.4
10 to 15	29.3	10	10	5.0
Over 15	46.0	16	14	4.6
Average applicable interest rate:				5.49

[a] Source: S. F. Goldsmith, "Income Distribution in the United States, 1952–55," *Survey of Current Business, op. cit.*, June 1956, pp. 9–16. Our income classes have to be defined as income before tax because the Survey data on which the interest rates are based are given on that basis.

[b] Since the income elasticities were derived from regressions on disposable, or after-tax, income, it is the distribution of income after taxes which supplies the proper weights for our average interest rate. The distribution after taxes was computed by applying the average tax rate for each income class (given in the Goldsmith article cited above) to the before-tax income.

[c] The rates for the lower brackets are carried over from the preceding section. The breakdown in the upper brackets is derived in detail in our discussion of Model B.

classes. As in Model A, rates of 9 per cent on short-term debt and 5 per cent on mortgages were used in deriving these rates, but, in the case of the upper-income classes, it is assumed that interest payments are deducted from the tax liability and the rates are adjusted accordingly.

Table V shows, as reported on income tax returns, in what form upper-income classes receive property income. These figures employ certain assumptions about the breakdown of business and professional income between wages and property income.[14] While we have no direct data on this breakdown, the Department of Commerce has estimated that, in 1949, 11.3 per cent of all incomes of $5,000 and over was professional income; 37.8 per cent, farms; and the remaining 50.9 per cent, unincorporated business. We consider all of the professional income to be a form of wages.[15] As for the income from farms and unincorporated business, we allow 50 per cent of the income as managerial wages and the remainder as income earned on assets.

Our rate of return for unincorporated business is based on a sample of firms reported by Dun and Bradstreet.[16] Most of the firms had assets in excess of $50,000—the proper size to yield incomes which fall into the brackets with which we are concerned. The average return for the sample was 6 per cent,[17] and we use this figure as our estimate. In the case of farming, the average rate of return on investment, after allowing for the value of the operator and family labor, has been estimated at 4.9 per cent for the year 1949, although the return in 38 per cent of the regions of the United States is in excess of 6 per cent.[18] The subsequent deterioration of farm prices has lowered the average return. But we are concerned with farms yielding an income in excess of $7,500, earned only on the farms which are the largest, most successful, and in the better regions, and so we assume a rate of return of 6 per cent to apply.

Treatment of the returns on stock poses severe problems. The *ex post* rate

TABLE IV

DEBT POSITION OF FAMILIES WITH INCOMES OVER $5,000

Family Income Class (thousand dollars)	Per Cent Owed More Than $100 of Short-Term Debt [a]	Per Cent Owed Mortgages only [a]	Per Cent Owed Neither Kind of Debt	Interest Rate Applicable to Debtors (per cent)
5 to 7.5	56	11	33	6.2
7.5 to 10	52	22	26	5.6
Over 10	41	22	37	4.9

[a] Source: Survey of Consumer Finances, *op. cit.*, pp. 701–03.

[14] U.S. Department of Commerce, *National Income, 1954 Edition, A Supplement to the Survey of Current Business*, p. 76.

[15] While many professions require considerable investment in equipment, a reduction in income would not be likely to have an effect on this kind of investment.

[16] *Dun's Review*, October, November, and December 1955. Data compiled by Roy A. Foulke.

[17] The sample consisted of groups of firms in many industries in manufacturing, wholesale and retail. The means and medians of industry medians in all three categories were approximately 6 per cent.

[18] E. G. Strand, E. O. Heady, and J. A. Seagraves, *Productivity of Resources Used on Commercial Farms*, U.S. Department of Agriculture, Technical Bulletin No. 1128, November 1955, p. 50.

of return has been extremely high in recent years because of the doubling of common stock prices. If we considered all capital gains to be income, the annual rate of return of recent years would exceed 15 per cent. But in making decisions, individuals did not fully anticipate these capital gains, nor would it be realistic to suppose that this rate will continue indefinitely. Yet, it also would be unrealistic to exclude all capital gains, since the high rate of income retention of corporations makes likely the continued growth of the value of stocks. To take account of this factor, we assume that the yield on stocks is equal to dividends plus retained earnings. In 1955, the average dividend yield on all common stock was 3.93 per cent; since only 50 per cent of earnings was paid out, we assume a total rate of return of 8 per cent.

Income from rent, interest, and from trusts represents relatively small shares of total property income. For the rate of return on real estate we use two sources. The first is profits of corporations whose main business is the holding of real estate. This has been at the rate of 12 per cent before taxes,[19] a figure which primarily represents commercial property and apartment houses. Second, for residential property as a whole, some unpublished investigations of R. Muth suggest an average rate of 5.5 per cent.[20] Since commercial property and residential property held by individuals in the upper-income bracket is likely to be of above average profitability, we assume that rental income is earned at a rate of return of 8 per cent. For interest, a rate of 3 per cent is assumed. This is slightly higher than the rates of 2.8 to 2.9 per cent which prevailed on government bonds in 1955, but lower than the average yield of 3.25 per cent on corporate bonds.[21] Finally, we assume that the income from trusts is earned at a rate

TABLE V

PERCENTAGE BREAKDOWN OF INCOME FROM ASSETS IN UPPER INCOME CLASSES [a]

Family Income Class (thousand dollars)	Business	Dividends Plus Retained Earnings	Rent	Interest	Income from Trusts
	(per cent)				
5 to 7.5	56.4	20.6	12.9	7.2	3.0
7.5 to 10	47.5	27.2	11.1	9.9	4.3
10 to 15	47.4	29.4	10.7	7.2	5.4
15 to 20	46.5	31.0	9.6	6.6	6.3
20 to 30	42.7	33.5	9.1	6.5	8.2
30 to 50	38.2	39.0	8.2	6.0	8.6
50 to 100	27.5	49.0	7.4	5.2	10.9
Over 100	10.9	64.2	5.1	3.3	15.8

[a] Source: U. S. Treasury Department, Internal Revenue Service, *Statistics of Income for 1952, Preliminary Report*. Direct data on the holdings of assets of investors, not derived from tax information, are generally consistent with the figures given here. See J. K. Butters, L. E. Thompson, and L. Bollinger, *Effects of Taxation on Investment by Individuals* (Boston: Harvard Business School, 1953), p. 468.

[19] U.S. Treasury Department, Internal Revenue Service, *Statistics of Income, 1951*; and *Statistics of Income, 1952, op. cit.*

[20] For an abstract, see R. F. Muth, "The Demand for Non-Farm Housing," *Econometrica*, April 1957, p. 365.

[21] *Federal Reserve Bulletin*, May 1956, p. 477.

TABLE VI

RATES OF RETURN EARNED BY HOUSEHOLDS, ADJUSTED FOR TAXES, BY INCOME CLASSES AND FORM OF PROPERTY

Income Class (thousand dollars)	Rates of Return for Form of Property Income (per cent)				Average Rate of Return [a] (per cent)
	Business Income	Dividends Plus Retained Earnings	Rent	Interest	
Average rate of return before tax [b] for 5 and over	6.0	8.0	8.0	3.0	..
Rate of return after taxes [c] for:					
5 to 7.5	4.5	6.5	6.0	2.2	5.0
7.5 to 10	4.2	6.2	5.7	2.1	4.7
10 to 15	3.8	5.8	5.1	1.9	4.4
15 to 20	3.2	5.1	4.2	1.6	3.8
20 to 30	2.5	4.6	3.2	1.2	3.2
30 to 50	2.1	4.4	2.8	1.0	3.1
50 to 100	1.4	4.0	1.9	1.2	2.9
Over 100	0.7	3.4	0.9	0.9	2.8
Applicable rate of return [d] for:					
5 to 7.5	4.5	6.5	6.0	2.2	5.0
7.5 to 10	4.4	6.4	6.0	2.2	4.9
10 to 15	4.4	6.4	5.9	2.2	5.0
15 to 20	3.9	5.9	5.2	2.0	4.6
20 to 30	3.9	6.0	5.1	1.9	4.6
30 to 50	3.7	5.8	4.9	1.8	4.6
50 to 100	3.2	5.6	4.3	2.3	4.6
Over 100	2.8	5.2	3.7	1.9	4.6

[a] The average is weighted by the distribution of property income by kind of property.

[b] See text.

[c] The following marginal tax rates are applied to the respective income classes: .25, .29, .36, .47, .59, .65, .76, and .89. These rates represent the marginal rate in each income class as indicated by the average tax liability reported for the class. In applying the rates, half of the income from stock is considered long-term capital gain. Also 25 per cent of the interest income in the two top brackets is considered to be from tax-exempt bonds yielding an average of 2.6 per cent; this assumption is based on the findings of Butters, Thompson, and Bollinger, *op. cit.*, p. 468.

[d] These rates are derived as follows. We assume the following propensities to save: .0, .12, .26, .26, and .40 on the brackets over $20,000. (Sources: Survey of the Bureau of Labor Statistics to revise the Consumer Price Index, 1950, as reported in *Business Week*, June 16, 1956, p. 104; the figure for the top bracket is based on the 1936 survey of the National Resources Committee reported in M. Bronfenbrenner, *et al.*, "A Study in Redistribution and Consumption," *Review of Economics and Statistics*, May 1955, p. 153, adjusted downward in accordance with the shift of the known portions of the consumption function.) We apply the rates after tax to the portion of the tax cut that would be consumed, and the rates before tax to the share that would be invested, and then compute a weighted average.

These rates can be given an alternative interpretation to that of the text. Let the government be considered a "partner" in the ownership of the assets; the return in excess of the after-tax rate can be considered to be the return earned by the government on the assets. The rate at which taxes are paid on the part of the tax cut which is invested measures the government's share of the returns.

equal to the average rate of return earned by the income class.

These rates have been stated before taxes. In the case of funds actually used for investment, this rate measures the social opportunity cost since the assets which the money makes possible yield this return. But in determining a rate of interest which measures the value of the funds used for consumption, we must use the rates of return that could be earned after taxes, since these are the rates which households actually face in making decisions. Table VI first gives the rates of return after taxes, and then shows the adjusted rates of return allowing for the higher rates that must be applied to the portion of the tax cut which is actually invested. Taking these adjusted rates in combination with the distribution of various kinds of property income of Table V, we derive the average rate of return applicable to the property holders in each income class (final column, Table VI). Combining the resulting rates with those given for debtors in Table IV, we derive the average interest rate for the entire income class (column 3, Table VII). Finally, bringing in the rates for low-income classes from Model A, and the distribution of the tax cut, we compute the over-all interest rate for this form of tax cut. These computations, summarized in Table VII, show an overall rate of 5.29 per cent.[22]

TABLE VII

SUMMARY OF DERIVATION OF INTEREST RATE APPLICABLE TO PROPORTIONATE REDUCTION OF PERSONAL INCOME TAX PAYMENTS

Income Class (thousand dollars)	(1) Interest Rate Applicable to Debtors (per cent)	(2) Interest Rate Applicable to Investors (per cent)	(3) Average Rate for Class (per cent)	(4) Per Cent Distribution of Tax Cut *
0 to 3	...	...	7.0	3.6
3 to 5	...	...	5.8	13.2
5 to 7.5	6.2	5.0	5.8	24.0
7.5 to 10	5.6	4.9	5.4	14.4
10 to 15	4.9	5.0	5.0	10.3
15 to 20	...	4.6	4.6	5.0
20 to 30	...	4.6	4.6	6.5
30 to 50	...	4.6	4.6	7.8
50 to 100	...	4.6	4.6	7.7
Over 100	...	4.6	4.6	7.5
Average applicable interest rate:				5.29

* Source: Goldsmith, *op. cit.*, p. 15. The breakdown of the 34.5 per cent paid on incomes above $15,000 is in proportion to the tax liabilities of these classes in 1952, as given in the *Statistics of Income for 1952, op. cit.*

Reducing the Corporation Income Tax Proportionately. We follow Musgrave in our assumptions for the incidence of the corporation income tax.[23] He assumes that one-third of the tax is passed

[22] If we assume that an additional return of 3 per cent above borrowing cost accrues to the investors to whom the additional savings are made available, our estimate is increased by .61 percentage points, to 5.9 per cent. This probably overstates the effect, since the return to the investor is identical with the return to the saver on a large part of the property incomes.

[23] Musgrave *et al.*, *op. cit.*

on to consumers, one-eighth to wage and salary earners, and that the remainder rests on the corporation. The interest rate applicable to the share of the tax cut benefiting wage and salary earners can be derived from the distribution of this form of income by income classes and our earlier estimates of interest rates. Similarly, the part of the tax cut passed on to consumers can be allocated to income classes in accordance with the distribution of consumption, and then be combined with our interest rates. The rates derived from these computations, summarized in Table VIII, are 5.81 per cent for wage and salary earners and 5.68 per cent for consumers.

TABLE VIII

DERIVATION OF INTEREST RATES APPLICABLE TO THE SHARES FOR WAGES AND SALARIES, CONSUMPTION, AND DIVIDENDS OF A REDUCTION IN THE CORPORATION INCOME TAX

Income Class (thousand dollars)	Per Cent Distribution of Wages and Salaries [a]	Per Cent Distribution of Consumption [b]	Per Cent Distribution of Dividends [a]	Interest Rate [c] (per cent)
0 to 3	15	12	4	7.0
3 to 5	33	24	6	5.8
5 to 7.5	29	29	8	5.8
7.5 to 10	11	15	7	5.4
10 to 15	5	9	11	5.0
15 to 20	7[d]	11[d]	7	4.6
20 to 30			11	4.6
30 to 50			13	4.6
50 to 100			14	4.6
Over 100			19	4.6
Average applicable interest rate	5.81	5.68	4.96	

[a] Source: *Statistics of Income for 1952, op. cit.*, adjusted for 1955 conditions by applying the pattern of change of the distribution of personal income reported in Goldsmith, *op. cit.*

[b] Assumes average propensities to consume in the respective income brackets as follows: 1.1, .96, .90, .82, .75, and .60. These propensities are taken from M. Bronfenbrenner et. al., *op. cit.*; values for the lower four income classes are based on Federal Reserve Board data for 1950; values of the upper two classes are from National Resources Committee data for 1935-6, adjusted upward in accordance with the drift of the known portions of the consumption function.

[c] See Tables I and VII.

[d] The percentages given are for all income classes of $15,000 and over.

Part of the unshifted portion of the tax cut is passed on to dividend recipients. We use the relationships between dividends and earnings established by Lintner, who found that an increase in earnings will lead to a gradual increase in dividends until the traditional payout ratio of the firm has been restored.[24] In the first year, dividends will rise 13.5 per cent of the increase in earnings; in subsequent years, the same percentage of the gap between the dividend paid in the previous period and the dividend called for by the firm's traditional payout ratio will be closed. For the country as a whole, the average payout ratio was .50 in 1955,[25] so a reduction of the tax

[24] J. Lintner, "Determinants of Corporate Savings," Chapter 14 in *Savings in the Modern Economy*, W. Heller, ed. (Minneapolis: University of Minnesota Press, 1953); and Lintner, "Distribution of Incomes of Corporations among Dividends, Retained Earnings and Taxes," *American Economic Review*, May 1956, pp. 97-113.

[25] *Statistics of Income for 1952, op. cit.* The payout ratio of small corporations is lower, and we assume

(See next page)

by $1.00 would increase dividends 13.5¢ in the first year, 23.4¢ in the second year, and so on until the increase would equal 50¢. An average of these payments over a period of 100 years—a period corresponding to the economic life of water resource projects—would be 47¢. So, of the 54 per cent of the tax cut which accrues to increased profits, 47 per cent is passed on to dividend recipients. The distribution of dividends by income classes is given in Table V; applying the interest rates derived earlier, we find that a rate of 4.96 per cent is applicable to this portion of the tax cut.

These allocations leave 29.2 per cent of the tax cut as the increase of retained earnings. How much will the investment of the taxed firms increase as a result? To answer this question, we consider firms with assets greater than $10 million separately from smaller firms. This division into "large" and "small" corporations is necessary because the influence of the availability of additional funds on investment varies sharply with the size of the enterprise; 75 per cent of the tax is paid by large firms, 25 per cent by the rest.[26]

In regard to large corporations, Lintner cites a number of reasons for believing that the effect on their real investment will be small.[27] Most corporations are forced to maintain a certain level of investment. Failure to expand capacity or to maintain a steady rate of reduction of costs, by jeopardizing the firm's competitive position in its industry, would pose a serious threat to its long-run future. Investment for diversification, which is usually motivated by a desire to reduce the variability of production levels and earnings, would also be relatively immune to changes in tax rates. If internally generated funds are inadequate for these purposes, the firm borrows. The effect on investment incentives caused by a tax rate which takes away part of a firm's profits on successful ventures, is, to a large extent, offset by the government's bearing part of the losses through reduced tax liability in the event of failure. Finally, in many instances, the limit to a firm's rate of expansion is not set by the diminishing attractiveness of profit opportunities in relation to borrowing costs, but rather by its supply of managerial personnel. The firm undertakes only as much investment as its staff can handle successfully. Lintner believes this analysis to be particularly applicable in periods of high employment. In depressions, firms hesitate to borrow for fear of inability to repay, and the relationship between the levels of taxation and of investment become much stronger. Since our analysis supposes that a successful stabilization policy precludes depression, we assume that an increase of retained earn-

a ratio of .35. This figure is an average of the payout ratios by asset size, weighted by the distribution of tax payments, and allowing for a gradual approach to the average ratio.

[26] In 1951, corporations with assets over $10 million paid 70.4 per cent of the tax (*Statistics of Income for 1951, op. cit.*). Figures for all corporations for 1955 are not yet available, but we can make a good estimate from the data on manufacturing. In this sector, which pays two-thirds of the entire tax, the percentage paid by large corporations rose from 76 per cent to 82.4 per cent from 1951 to 1955. Our estimate assumes a somewhat smaller increase of taxes paid by large corporations outside manufacturing.

[27] J. Lintner, "Effects of Corporate Taxation on Real Investment," *American Economic Review*, May 1954, pp. 520-34. For an analysis of the effect of taxation on the conditions of supply of capital see J. K. Butters, "Federal Income Taxation and External vs. Internal Financing," *Journal of Finance*, September 1949, pp. 197-205. In times of very tight money, the effect on internal investment will be larger, of course. For a somewhat stronger emphasis on liquidity as an investment-determining variable, see J. Meyer and E. Kuh, "Acceleration and Related Theories of Investment: An Empirical Inquiry," *Review of Economics and Statistics*, August, 1955, pp. 217-230.

ings of $1.00 would lead to only 10¢ of added investment in the large firm. A rate of return of 21 per cent, the average rate of return of large corporations in 1955 before taxes,[28] is assumed for the share of the tax cut that would be invested by the firm.

The liquidity of the large firm would be increased by the remaining 90¢ of increased retained earnings. A firm with a significant amount of debt would be able to lower it; firms which raise funds by financing their accounts receivable could reduce this practice; those which are creditors would be able to increase their financial assets—consisting in the case of large corporations primarily of government securities.[29] Thus, the major share of the increase of retained earnings would add primarily to that large pool of low-interest, low-risk, relatively liquid capital into which excess corporation funds are channeled, and from which the loans of large corporations, governments, and financial institutions are drawn. An increase in the supply of loanable funds in this market would have several effects. To some extent, interest rates on low-risk securities would fall and the severity of rationing would diminish, leading to some increase of mortgages and perhaps even a small increase of business borrowing. The effect of the drop in low-risk interest rates would be gradually diffused through the credit structure, as banks and other financial institutions adapted their portfolios to the changed pattern of interest yields. Because the primary impact of the increased supply of funds is on the low-interest, low-risk sector of the capital market, and only the spill-over occasioned by secondary repercussions makes funds available to risky investments producing higher yields, we assume an average rate of 5 per cent to apply to this part of our tax cut.

The investment behavior of small corporations is considerably more sensitive than that of large corporations to changes in tax rates.[30] Companies with high growth potential are affected most adversely by corporate taxes which prevent internal accumulation of the capital they need. External sources of long-term capital are available to small companies only at high cost in terms of both money and loss of control.[31] The corporation income tax also diminishes the attraction of risky investments, since a small firm is less likely to be able to take advantage of the loss-offset provisions to reduce the tax liability on profitable operations. But the significance of these arguments should not be overstated. Not all small business would grow rapidly in the absence of taxes; the need for new capital of many companies is small and can be satisfied.[32] We assume

[28] This figure is derived as follows: 79 per cent of the tax cut goes to manufacturing, 17 per cent to utilities, and 5 per cent to trade. The average rate of return of large corporations in manufacturing was 23.8 per cent (reported in *Quarterly Financial Report for Manufacturing Corporations, Fourth Quarter 1955*, Federal Trade Commission and Securities and Exchange Commission, Washington, April 1956). The rate for utilities was estimated directly from prevalent standards of rate regulation to be equal to 10 per cent. The rate for trade, which is equal to 20 per cent, assumes that it stood in the same ratio to the rate in manufacturing as in 1952. (Figures for 1952 from Securities and Exchange Commission data.) A weighted average yields our estimate. The concept of rate return used by the SEC may overstate the actual rate by 1-2 per cent.

[29] C. E. Silberman, "The Big Corporate Lenders," *Fortune*, August 1956, p. 112.

[30] Lintner, "Effects of Corporate Taxation on Real Investment," *op. cit.*, p. 533.

[31] For an analysis of the case of the growing firm, see J. K. Butters and J. Lintner, *Effect of Federal Taxes on Growing Enterprises* (Boston: Graduate School of Business Administration, Harvard University, 1945).

[32] "External Financing of Small- and Medium-Size Business," *Survey of Current Business*, *op. cit.*, October 1955, pp. 15-22.

that 50 per cent of the increase in retained earnings is invested within the small firm; to this we assign a rate of 18 per cent.[33] The remaining 50 per cent, we assume, is used to reduce bank loans or to purchase liquid assets, at a rate of 5 per cent.

The computation for the proportionate reduction of corporation income taxes is summarized in Table IX. The interest rate applicable to this reduction is 5.59 per cent.[34]

Combining this figure with the rate obtained for the proportionate reduction of personal income taxes, a figure of 5.44 per cent is derived as the cost of capital under Model B. Model A yielded an estimate of 5.79 per cent. And so our computations suggest that the cost of money raised by taxation is in the range of 5 to 6 per cent.[35]

TABLE IX

SUMMARY OF DERIVATION OF INTEREST RATES APPLICABLE TO PROPORTIONATE REDUCTION OF CORPORATION INCOME TAX PAYMENTS *

Incidence	Per Cent of Tax Cut	Applicable Interest Rate (per cent)
Shares of tax cut:		
Shifted to consumers	33.3	5.68
Shifted to wage and salary earners	12.5	5.81
Left as increased corporate earnings	54.2	
Large corporations—Distribution of 75 per cent of total increased corporate earnings:		
47 per cent passed on in dividends	19.1	4.96
53 per cent retained as earnings, of which		
10 per cent invested in firm	2.2	21.00
90 per cent reduces debt or loaned in market	19.4	5.00
Small corporations—Distribution of 25 per cent of total increased corporate earnings:		
35 per cent passed on in dividends	4.7	4.96
65 per cent retained as earnings, of which		
50 per cent is invested in firm	4.4	18.00
50 per cent reduces debt or loaned in market	4.4	5.00
Average applicable interest rate		5.59

* Source: See text.

[33] This rate is obtained as follows: In manufacturing, to which 54 per cent of the tax cut accrues, the average rate of return of small corporations was 18 per cent in 1955 (*Quarterly Financial Report, op. cit.*); for utilities, which pay 9 per cent of the tax, the rate is about 10 per cent; and in trade, which pays 18 per cent of the tax, the rate is 20 per cent (see footnote 27). The remaining 19 per cent of the tax cut goes to finance, services, and construction; we assume that the average rate for small corporations applies here. A weighted average of these rates yields our estimate.

[34] Again making an allowance of 3 per cent for the return accruing to the investors of the additional personal savings, our estimate is raised by .24 percentage points to 5.83 per cent. Were we to assume an extra return of 3 per cent on the funds made available to the capital market by corporations as well, the total estimate would rise to 6.59 per cent. In times of moderate monetary policy, the condition postulated for our analysis, these effects would not be of the magnitude indicated here.

[35] The interest rates derived from our two models are quite similar, although the assumed changes in taxation are very different. This offers strong support for considering our value to be of the right order of magnitude. But before accepting this conclusion, we examined the possible errors in the assumptions and in the data of our quantitative analysis.

The first possible source of error is our analysis of

(See next page)

the incidence and effects of taxation. Insofar as possible, we have tried to follow the views generally held by experts in this field. Experiments with somewhat different assumptions of incidence produced interest rates similar to those obtained. Two exceptions, however, would upset our results. First, if it is assumed that a reduction in the corporation income tax will lead to an upsurge of investment by large corporations, then more of the tax cut would earn the high rates of profit which are prevalent. We have tried to show, however, that this effect is unlikely under the assumed economic condition of high employment. Second, it can be argued that the high levels of federal taxation lead to a large waste of economic resources caused by the managerial efforts devoted to the tax problem and the distortions in economic decisions of firms and households caused by a desire to avoid taxes. These considerations are not likely to have much relevance to the problem under study here because the magnitudes of the possible tax reduction are so small compared to the taxes which are needed to finance defense and other programs.

The rates of return which we assumed are another possible source of error. Through parts of the analysis, average rates were used to approximate marginal rates of return. Households were assumed to add to their assets in such proportion that the average rate of return of their property incomes would remain constant; similarly, business was assumed to make its additional investments at a rate equal to its average rate of return. For any one firm or household, that is not likely to be a good approximation, but for large aggregates the error will be smaller. The typical household will not hold assets in the proportions of the group average; some households will make their investments in their own businesses, others in common stocks, others in real estate, depending upon the experience of the head of the household and the opportunities to which he has access. Additional funds are likely to be put into the household's predominant form of asset. With the tax cut spread over all households in the income class, the money is likely to be invested in proportion similar to the total holdings. Similarly, in the case of industry, the tax cut is diffused over successful and marginal firms in many fields. This does not rule out a systematic bias between marginal and average rates, but the direction of bias is not clear. On the one hand, extra funds must go into investment opportunities which are considered marginal in comparison to the opportunities which are undertaken without the tax cut. On the other, new investment opportunities may yield generally higher returns than the reported average for old and new capital. It should also be stressed that most of Model A and a large part of Model B do not use this approximation, containing the marginal rates directly.

INCOME AND TAX ASPECTS OF COMMERCIAL BANK PORTFOLIO OPERATIONS IN TREASURY SECURITIES

ROBERT H. PARKS *

THE special tax position of commercial banks led them to engage in special investment and trading operations in Treasury securities in the post-World War II period. The purpose of this paper is to examine the nature and economic significance of these operations.

First, the legislation which bears on the tax status of commercial banks is analyzed in the light of the testimony offered by bankers before Congress. Of particular concern is the two-way tax option afforded commercial banks in the Revenue Act of 1939 (also in 1942 and 1954) which permitted them to treat most of their portfolio of Treasury securities as stock-in-trade or capital assets—at their option. The study continues with the development of the theory and the mechanics of tax swaps of Treasury securities among commercial banks. Following this, portfolio operations, including net purchases and sales of Treasury securities and tax swaps, are reviewed in relation to the actual profit and loss experience of commercial banks in the postwar years.

THE TAX STATUS OF COMMERCIAL BANKS

Changes in Tax Status

Before 1941 most of the securities owned by commercial banks were either fully or partially tax-exempt (Table I). The taxable income generated by the security portfolio was mostly offset by expenses incurred in its operation. Banks thus paid little in taxes on security holdings.

The tax status of commercial banks changed from this earlier period in three respects. First, Treasury securities issued after March, 1941 were declared fully taxable. Second, Treasury issues which had been partially tax-exempt were gradually retired so that by December, 1956 only two partially tax-exempt issues were still outstanding. Third, tax rates were boosted sharply after 1941.

These three changes meant that virtually all of the income generated by the Treasury security portfolio became fully taxable—and taxable for most banks at a rate of 52 per cent.[1]

Three means were open to commercial banks whereby they could reduce their tax burden over the postwar years. The first was to buy fully and partially tax-exempt Treasury obligations. However, this means of avoidance became less and less a real alternative open to them. As of March, 1941, about four-fifths of the total marketable Treasury security portfolio of commercial banks was wholly or partially tax-exempt while about one-fifth was fully taxable (Table

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[1] Until the excess profit tax expired in December 1953, some banks were subject to an 82 per cent marginal tax bracket (52 per cent normal and 30 per cent excess).

I). As of June, 1956, almost all (95 per cent) of the Treasury security portfolio was fully taxable. The two remaining partially tax-exempt Treasury bonds held by commercial banks were the only Treasury bonds to be priced above par as of June, 1956. Commercial banks showed no desire to sell these particular issues.[2]

The second means whereby commercial banks reduced their taxable income was to invest in tax-free obligations of states and other political sub-divisions. Member commercial banks increased their holdings of these securities from $3.3 billion in December, 1945 to $10.6 billion in June, 1956. As of June, 1956 these securities amounted to eight per cent of their total earning assets of $134.4 billion and 18 per cent of their total investment portfolio of $60 billion.[3] Commerical banks did not invest more heavily in these issues because of their greater market instability compared to Treasury bonds. The greater instability was due to the fact that these securities included thousands of small issues of different governmental units with different debt-paying capacities; they were generally traded less frequently and in thinner markets than Treasury bonds. Individual issues were not ordinarily available in sufficient quantities to meet the secondary reserve needs of commercial banks.

The third means open to commercial banks which served to reduce their taxable income was the double tax option afforded them in the Revenue Act of 1939 and thereafter. As already indicated, this option came to be very valuable to banks, and is analyzed in detail below. It should be pointed out, however, that commercial banks were afforded special tax treatment even before the Revenue Act of 1939 as compared to other corporate and individual investors.

TABLE I

CLASSIFICATION BY TAX-STATUS OF MARKETABLE U. S. TREASURY SECURITIES OWNED BY COMMERCIAL BANKS, SELECTED DATES

	March 31, 1941		December 31, 1945		December 31, 1950		June 30, 1956	
	Par value (billion dollars)	Per cent of total	Par value (billion dollars)	Per cent of total	Par value (billion dollars)	Per cent of total	Par value (billion dollars)	Per cent of total
Wholly and partially tax-exempt	$15.3	81%	$13.6	17%	$ 8.7	16%	$ 2.5	5%
Fully taxable	2.3	19	64.9	83	45.8	84	47.0	95
Total	$17.6	100%	$78.5	100%	$54.6	100%	$49.5	100%

Source: Calculations based on absolute data as reported in the *Treasury Bulletin*.

Tax Status of Security Holdings of Commercial Banks Prior to the Revenue Act of 1939

Before January 1, 1940, debt securities owned by commercial banks, which were in registered or coupon form, were designated capital assets for both loss and gain purposes.[4] Investors other than

[2] These issues were the 2¾'s of 6/15/63-68 and the 2¾'s of 12/15/60-65.

[3] All absolute data cited in this study were taken from various issues of the *Federal Reserve Bulletin*.

[4] (See next page)

commercial banks could not deduct more than $2,000 of capital losses from capital gains regardless of whether the losses were incurred at sales prices above or below par. Commercial banks were subjected to the same loss limitation of $2,000 on any sales made above par but at a loss. However, the loss limitation of $2,000 did not apply to that portion of the loss which represented the difference between par (100) and the sales price made below par.[5]

The advantage of the special tax treatment afforded commercial banks can best be seen by means of an illustration. For example, if a non-bank investor were to buy fully taxable Treasury bonds at 104 and sell at 97, he would incur a $7 loss per $100 par of bonds sold. Assuming the non-bank investor had bought $100,000 par value of bonds, he would have been entitled to deduct only $2,000 of his losses from any capital gains even though he sold at an actual $7,000 loss. Assuming he had enjoyed gross capital gains of $13,000, he would have had to report net capital gains of $11,000 ($13,000 less $2,000). If a commercial bank had entered into identical transactions it could have reduced its capital gains by $5,000. The deduction of $5,000 would have represented the $2,000 loss allowed on the actual $4,000 loss realized above par plus the full $3,000 loss realized below par. The net taxable gains for the bank would have amounted to $8,000, that is, $13,000 of gross capital gains less $5,000 of deductible capital losses.[6]

Revenue Act of 1939

The Revenue Act of 1939 did not distinguish between the sales of capital assets above or below par. This meant that banks were treated exactly like any other investor with respect to capital gains and losses. The special tax treatment was based upon the two-way tax option afforded commercial banks. They were permitted to treat both short-term and long-term losses as stock-in-trade losses deductible in full from reported income as ordinary operating expenses; long-term gains on the very same class of securities (defined below) could be treated as capital gains taxed at the capital gains rate.

The authority for this treatment is found in Section 117 (i) of the Internal Revenue Code of 1939, which was incorporated in the Revenue Act of 1942 and the Revenue Act of 1954. According to the 1954 Code,[7] a bank is defined as:

> Any bank or trust company . . . a substantial portion of the business of which consists of receiving deposits and making loans and discounts. . . . Such terms also mean a domestic building and loan association.

Securities eligible for the special two-way tax treatment are specified in Para-

[4] "*Capital Assets* means property held by the taxpayer (whether or not connected with his trade or business), but does not include stock in trade of the taxpayer or other property of a kind which would properly be included in the inventory of the taxpayer if on hand at the close of the taxable year, or property held by the taxpayer primarily for sale to customers in the ordinary course of his trade or business. . . ."

Quoted from *Internal Revenue Code*, Sec. 117 (a) (1).

[5] Security dealers (who are not classified legally as investors) could treat net losses on sales as operating expenses fully deductible from income. Net gains were taxable as income. It made no difference whether losses or gains were short-term or long-term (over six months). In other words dealers treated their securities as stock-in-trade rather than as capital assets.

[6] The further assumption made is that the bonds were not amortized for tax purposes. The assumed cost basis was the purchase price (original cost).

[7] Subchapter H, Part 1, Paragraph 581.

graph 582 (c):

> In the case of a bank, if the losses of the taxable year from sales or exchanges of bonds, debentures, notes, certificates, or other evidences of indebtedness, issued by any corporation (including one issued by a government or political subdivision thereof), with interest coupons or in registered form exceed the gains of the taxable year from such sales or exchanges, no such sales or exchanges shall be considered a sale or exchange of capital assets.

Commercial banks, then, could treat their Treasury notes and bonds as stock-in-trade for short-term or long-term loss purposes and as capital assets for long-term gains purposes. Certificates, if registered or in coupon form, could be treated likewise. Bearer certificates in which the full amount of the interest and principal were repayable by check at the maturity of the contract were not eligible. Treasury bills were specifically excluded and had to be treated by all investors, including banks, as stock-in-trade for both loss and gains purposes. This meant that gains on bills (as of 1957) were taxed at 52 per cent (for banks earning over $25,000) while losses reduced taxes by 52 per cent of the loss. Long-term gains on notes and bonds (and eligible certificates) were taxed at 25 per cent while short-term or long-term losses reduced taxes by 52 per cent of the loss.

The only further restriction, with respect to capital gains, was that they applied to securities held for investment purposes only. The Bureau of Internal Revenue made this special ruling in 1950 to prevent dealer-banks from switching their stock-in-trade securities from their inventory held in the dealer department of the bank to the investment portfolio of the same bank in order to take advantage of the lower rate on capital gains. As of 1950, then, securities held for trading purposes by the dealer bank had to be treated strictly as stock-in-trade.[8] Like independent government security dealers, they were obliged to treat any gains on such securities as an addition to income and any losses as a subtraction from income.

Analysis of the Special Tax Status of Commercial Banks

The tax treatment afforded commercial banks in the Revenue Act of 1939 was designed to widen the market for Treasury securities by making them more attractive to banks. At the time the legislation was passed tax rates were relatively low so that the tax option did not mean so very much to the banks. However, with the sharp rise in income tax rates after 1940, the option to treat eligible securities as stock-in-trade or as capital assets grew to be a very valuable option indeed.

The bankers, themselves, did not ask for the two-way tax option. Their request was simply that their security portfolio, including both debt and equity securities, be treated as stock-in-trade rather than as capital assets for both loss and gain purposes. While the Act did not remove capital stock from the category of capital assets it did allow banks, as noted, to treat most of their portfolio of debt-securities as either capital assets or stock-in-trade.

That the bankers did not demand the two-way option which they, in fact, received is well supported by their testimony before Congress. In the hearings before the Committee on Ways and Means of the House of Representatives, the official spokesman for the American

[8] Bureau of Internal Revenue, *Cumulative Bulletin*, 1950, II, p. 43.

Bankers Association argued:

> . . . we have asked that the stock and securities owned by banks be exempted from the definition of capital assets on the grounds that banks are merchants of credit, and that the thing in which they deal are no more of the type of capital assets contemplated by the taxation of capital assets, or returns on capital assets, than an inventory of an ordinary hardware merchant, or what have you.
>
> Banks are primarily engaged in the purchase and sale of credit. They make loans. Some of these loans are made in the form of promissory notes and others in the form of bonds. Primarily, they desire to make loans in the form of promissory notes.
>
> When there is not sufficient local demand for loans banks are forced to go into the open market and buy bonds. Those bonds are bought when the banks have a surplus of funds, and they are sold when the local demand requires that they be sold. It is not a speculative activity.
>
> We feel that the limitation on the losses on the sale of capital assets by banks is not a proper limitation.
>
> We are asking, therefore, that the section be amended so that securities held by banks be removed from the definition of capital assets.[9]

Five years earlier, in 1934, the bankers argued that their securities should be treated as stock-in-trade. The statement of one banking representative made before the Committee on Finance of the United States Senate in May, 1934, is quoted, in part, as follows:

> Banks and insurance companies are engaged in a type of business entirely different from all others. . . .
>
> The ordinary business corporation can control the amount of its inventory and the payables, but banks and insurance companies are subject entirely to popular whim. The business corporation can, within limits, liquidate its inventory and pay its creditors at or before maturity, but a bank is compelled to liquidate its inventory at such times as the depositors demand their money.
>
> The merchant or manufacturer computes his gross earnings on the inventory method of accounting, with the result that losses on his stock in trade or product are reflected in the determination of gross income. Banks and insurance companies are substantially the only type of businesses which are not permitted by the income tax authorities to use the inventory method of accounting. This distinction, made by the tax authorities for over twenty years, places banks and insurance companies in a separate classification. If this tax principle is maintained, banks and insurance companies should be given as deductions in computing net income what business corporations are allowed in computing gross income, namely, the losses necessarily incident to the primary income producing function. . . .
>
> The English income tax laws recognize this distinction . . . Banks . . . are required to include in their income as a normal incident to their business profits on the sale of securities and for the same reason are allowed to deduct from their income all losses on the sale of securities.[10]

The spokesman for the American Bankers Association argued:

> In dealing with this subject it must be considered that banks and insurance companies do business on a basis which does not result in substantial capital gains. The income from a banking institution is derived, primarily, from interest on loans and income from securities. Securities

[9] United States Congress, House of Representatives, *Revenue Revision—1939*, Hearings before the Committee on Ways and Means, Seventy-sixth Congress, First Session, May 27, 29, June 2, 3, and 5, 1939, p. 142.

[10] United States Congress, Senate, *Revenue Act of 1934*, Hearings before the Committee on Finance, Seventy-third Congress, Second Session, on HR 7835, March 12 to 15, 1934, p. 202.

> are bought and sold as banking transactions, and any gain or loss in these transactions should be treated the same as any other revenue or expense.[11]

These statements of the banking fraternity to the effect that the security holdings of banks should be treated strictly as stock-in-trade rather than as capital assets are based upon two arguments. One is argument by analogy and the other is argument by comparison. The first suggests that commercial banks are very much like hardware merchants and should be treated as such. The second argues that since commercial banks in England were allowed to treat their security holdings as stock-in-trade, commercial banks in the United States should be permitted to do likewise.

It is ironic that the arguments of the bankers themselves were critical of the special tax treatment actually afforded them in 1939. The irony is that the tax savings which have been made available to them under this option far exceed the savings which would have been available under a one-way stock-in-trade treatment.

The argument by analogy is weak indeed. The bank is not, like the hardware merchant, exclusively engaged in purchasing goods with the intention of resale. In the thirties (and the fifties) the commercial banks did, it is true, direct a very much smaller percentage of their assets into investment securities than in the war and early postwar periods. However, with over one-third of total earning assets of commercial banks in Treasury securities as of 1956 (over two-thirds in 1946), it seems farfetched to look upon such securities as an inventory designed for a quick turnover. For the most part they represented assets held principally for investment purposes.

With respect to longer-dated Treasury securities, the intention of the banker is ordinarily to hold for investment purposes. He may accordingly classify these securities as a part of his investment portfolio rather than as secondary reserves. In the event that he is faced with a temporary drain of reserves, resulting from depositors' claims, he may well prefer to sell his shorter-term securities or to borrow from the central bank. A persistent and chronic drain of the kind experienced in the thirties however, might, force a banker to sell out his investment portfolio of securities, in which instance, there might be some merit in affording him some tax relief or other outright aid.

It is true that " a bank is compelled to liquidate its inventory at such times as depositors demand their money," assuming such drains are not met by member bank borrowings. It is also true, however, that a bank will voluntarily liquidate its securities for tax purposes, to get into higher yielding loans, to accommodate good customers, or in the anticipation of a decline in security prices. One could hardly justify, then, the treatment of a given class of securities as stock-in-trade on the grounds that banks may, on occasion, be " compelled " to sell these securities. Furthermore, the notion that " the ordinary business corporation can control the amount of its inventory " while banks are " subject entirely to popular whim " cannot be reconciled with these completely voluntary operations entered into by banks. No one can defend the notion that bankers were passive institutions entirely at the mercy of their depositors and unable, therefore, to exercise any control over their security portfolios.

[11] *Ibid.*

From what has been said, it is clear that the bank is neither a pure merchant nor a pure investor but rather a hybrid. The pure merchant in hardware may be analogous to the independent government security dealer but not, certainly, to the ordinary commercial bank. One cannot use the analogy of the merchant, therefore, to justify a one-way tax treatment of the security portfolios of commercial banks. Patently, the merchant analogy never was intended to justify a two-way tax treatment.

The argument by comparison appears equally weak. The fact that securities *are* treated as stock-in-trade in Great Britain does not mean that it is *desirable* to treat them as stock-in-trade in the United States (or Great Britain). To justify any given tax treatment would require something more convincing than argument by analogy or argument by comparison.

TAX SWAPS

Legal Aspects of Tax Swaps

The stock-in-trade option afforded banks in the Revenue Act of 1939 induced them to engage heavily in tax swaps of Treasury bonds. Swaps, as the term suggests, do not involve a net addition to or subtraction from the total security portfolio since any purchases of Treasury securities are offset by an equivalent amount of sales. Treasury bonds constitute the usual swapping medium. While swaps may be entered into for the purpose of changing the maturity composition of the portfolio, or for other reasons, banks may engage in swaps solely for tax purposes—that is, they would be completely willing to buy back the identical securities sold, if it were not for the wash sale rule. According to that rule, if a security is sold at a loss, the seller may not repurchase substantially identical stock or securities until 30 days have elapsed. The bank, then, has the option of investing the proceeds of the sale for the 30 days waiting period in Treasury bills or other suitable securities if it is willing to assume the risk of changing interest rates over this period. Its second option is to reinvest immediately in bonds which are not identical to but are very similar to the ones sold, and this is the course usually followed. If a security held over six months is sold at a profit, the very same issue may be repurchased immediately without any tax penalty.

Theory of Tax Swaps

The theory underlying tax swaps may be made clear by way of illustration. Suppose that identical securities are acquired by way of swaps and that no reinvestment delays are involved. The nature of these operations is made clearer by reference, first, to a tax-free situation; second, to a situation in which both income and capital gains are taxed at the same rate; and, finally, one where the capital gains rate is appreciably lower than the income tax rate. In each of the following three illustrations, the assumption is made that commercial banks swap 2 per cent coupon bonds, with five years to maturity, priced at a discount to yield 3 per cent. In accordance with bond-yield tables, these bonds would be quoted at $95.39 which is equivalent to a $4.61 discount. In the second and third illustration, the assumption is made that commercial banks treat their losses as stock-in-trade losses and their gains as capital gains.

In a tax-free world the bank could sell and realize a $4.61 loss, but as long as it were afforded the opportunity to reinvest in identical bonds yielding 3 per cent, the increased income earned over

the life of the new bonds would just offset the immediately realized capital loss. In other words, it would make no difference at all whether or not the bank retained the bonds or sold at a loss. If the bank retained the bond its coupon income would be $1.00 semi-annually. If it sold and reinvested the full amount of the proceeds at a rate of 3 per cent per annum (1.5 per cent semi-annually) it would earn $1.43 interest every six months (0.015 x $95.3). The interest earned on the security acquired by way of the swap would be in excess of the interest which would have been earned by way of retention of the old security by $0.43 every six months, ($1.43 less $1.00). Now the accumulated amount of an annuity of $0.43 at the rate of 1.5 per cent semi-annually on a five year bond is just equal to $4.61 and this, in turn, would be just equal to the amount of the initially realized capital loss. It follows, therefore, that the increased earnings over the life of the new bond, acquired by way of the swap, would accumulate to a sum at the end of five years which is just equal to the loss incurred on the sale of the old bonds.

Assume now that both capital gains and income taxes are established at a rate of 50 per cent, but that all other conditions are the same. If the bank retains the bonds, it is afforded a total pre-tax income of $10.00, that is ten semi-annual payments of $1.00 each. After taxes, the coupon income over the life of the bond would amount to $5.00. As an alternative to retention the bank may elect to sell and buy back an identical security. In this instance, its coupon income would also amount to $5.00 on an after-tax basis. However, the fact is that part of the total tax burden would be deferred (not eliminated). This is not difficult to see. It was assumed that the sale was made, initially, at a capital loss of $4.61. Now if this loss were treated as a stock-in-trade loss, the taxable income for the current period would be reduced by the full amount of the loss, or $4.61. Assuming a 50 per cent tax rate, an immediate tax saving would be realized to the amount of 50 per cent of $4.61, or $2.31. At the maturity of the contract, however, a capital gains tax would have to be paid on $4.61. The capital gains tax would amount to exactly $2.31 or an amount just equal to the initial tax savings at the time of the swap.

In view of the fact that the capital gains tax just offset the initial tax saving, one might conclude that there was no net advantage to the swap. However, such a conclusion is not supportable in view of the fact that the tax saving was afforded the investor immediately while the additional capital gains tax was deferred in its entirety until the maturity of the contract (after five years). In terms of the illustration, the establishment of the stock-in-trade loss of $4.61 made possible the deferment of $2.31 in taxes for five years. Therefore, the investor was, in effect, afforded the use of $2.31 for five years, the equivalent of an interest free loan. This amount ($2.31) invested at 3 per cent per annum, compounded semi-annually, would grow to $2.68 at the end of five years. Since the capital gains tax would amount to $2.31 at the end of five years, the investor would have earned about $0.37 extra income by way of the swap, as compared to retention of the old security.[12] In terms of present value,

[12] The savings can be expressed as follows:

$$[(1+i)^n \times \text{Tax Saving}] - \text{Tax Saving} = \text{Additional Return Derived from Swap}$$

$$[(1.015)^{10} \times 2.3055] = \$2.68 - \$2.31 = \$0.37$$

$0.38 due five years hence and discounted at a rate of 3 per cent is worth about $0.32, which is the present value of the swap in terms of the "deferral effect."

In addition to the deferral effect swaps represent an especially advantageous tax operation for banks in view of the differences in the capital gains and income tax rates. Not only can part of the tax burden be deferred, but part of the burden can be eliminated entirely. By way of illustration, assume a 52 per cent income tax rate and a 25 per cent capital gains rate with all other conditions the same as before. Now, as far as coupon income is concerned, whether the bonds are retained or swapped makes no difference. In each instance, it amounts to $10 before taxes and $4.80 after taxes. The advantage of the swap again lies in the initial tax saving together with the deferred capital gain which is taxed at only 25 per cent. The initial tax saving is equal to 52 per cent of the capital loss. The capital loss was assumed to be $4.61 which could be treated, again, as a stock-in-trade loss, thereby reducing taxable income by $4.61 and taxes by 52 per cent of $4.61 or $2.21. It is true that at the end of the contract maturity the full amount of the capital gain ($4.61) is taxed, but at the lower rate of 25 per cent, or $1.15 in absolute terms. At the end of five years, the investor would collect $3.46 or the amount of the capital gain ($4.61) less the capital gains tax ($1.15). The present value of $3.46, discounted at 3 per cent for five years, is equal to $2.98. The net advantage of the swap, then, is equal to the present value of the capital gain (after taxes) due in five years ($2.98) less the immediately realized net loss ($2.21) or $0.77.

By way of summary, swaps at losses are profitable for two reasons. First, part of the tax burden is deferred until the maturity of the contract (of the security acquired in exchange). The postponed tax payment affords the banker the free use of funds which, otherwise, in the absence of the swap, would have been taken from him immediately by way of the income tax.[13] It should be emphasized that this particular advantage is not dependent upon a difference in tax rates on capital gains on the one hand and income on the other; even if the capital gains rate and the income tax rate were both identical, some net advantage would still accrue to the investor.

The second advantage, very much more significant than the deferral effect, is the elimination of a part of the tax burden. The second advantage lies in the fact that commercial banks may subtract losses, short-term or long-term, from ordinary income as an ordinary

[13] The rapid amortization of capital equipment reminds one of the same type of savings.

In the illustrations above, the assumption was made that commercial banks would swap in order to establish stock-in-trade losses and subsequently establish capital gains. This is the usual practice when bonds are priced below costs of acquisition.

In easy money markets banks may own bonds which are priced on the market at values much higher than their costs of acquisition. In such instances it may pay the banker to swap in order to establish capital gains. The reason is that the security acquired is put on the books at a premium. The premium may be pro-rated over the life of the bond and deducted from income. This reduces taxable income (over the life of the bond) by the full amount of the original capital gain. Thus, the bank would be taxed 25 per cent on the capital gain but enjoys tax savings of 52 per cent on the same amount.

For example, if certain Treasury bonds were priced at 105, the banker who bought at 100 could establish a capital gain of $5.00 of which $1.25 would be taxed as a capital gain. The $5.00 premium, however, could be used to reduce taxable income by $5.00 over the life of the bond. With a 52 per cent income tax rate, the banker could reduce his taxes by 52 per cent of $5.00 or by $2.60. The reduced tax bill would amount to $2.60 less $1.25, or $1.35.

operating expense, thereby affording the investor an immediate tax saving. Since the security acquired in exchange is purchased below par, the appreciation to par is taxed—not as ordinary income—but as capital gains. Not only is part of the tax burden deferred, but that portion which is deferred is ultimately taxed at the capital gains rate of 25 per cent instead of the income tax rate of 52 per cent, applicable to banks earning over $25,000 per annum.

The theory underlying the timing of tax swaps seems simple enough.[14] Ideally, a banker could maximize his long-run earnings by swapping at both the top and the bottom of the market (price wise). As a practical matter, since the future cannot be known in advance, banks often engage in swaps once prices decline. A further decline in prices induces additional swaps which are repeated as long as prices continue to decline. The repeated turnover of the security portfolio on the down-swing assures losses at or near the bottom of the market. If the end of the accounting year is near at hand, banks which have deferred making swaps do so in order not to lose out entirely, and for this reason swaps are sometimes bunched together at the end of the year. It should be recognized that a declining level of security prices (rising interest rates) is generally associated with economic expansion and business prosperity; thus the banks are able to reduce their reported taxable profits through tax swaps at the very time they enjoy higher gross profits.

When Treasury security prices are rising (usually during recession) banks establish capital gains by way of tax swaps and find the operations profitable as long as the security sold was held at least six months in order to qualify for capital gains treatment.

The desire on the part of the commercial banker to avoid establishing both gains and losses in the same year has reduced the net advantage of engaging in short-run speculative transactions. For example, in the event that the banker decided upon a "loss" year, any short-run gains which he makes reduces by the same amount the total stock-in-trade losses which may be subtracted from current income. A short-run gain of X dollars, resulting from the purchase and immediate resale of Treasury securities would reduce stock-in-trade losses by X dollars and increase reported taxable income by the same amount, 52 per cent of which would be taxed away. If possible, the banker would prefer to wait until a "gains" year and thereby pay only a 25 per cent tax.

PROFITS AND LOSSES ON COMMERCIAL BANK PORTFOLIO OPERATIONS IN TREASURY SECURITIES

Portfolio Operations and Reported Earnings

It is revealing to look at the effect of tax swaps and net purchases and sales of Treasury securities on the reported profits and losses of commercial banks.[15] In 1954, the member banks established profits on the sale of securities (mostly Treasury bonds) in the amount of $375 million; this represented the highest level of security profits ever enjoyed by member banks in the entire history of the Federal Reserve System, and yet 1954 was a year mainly of recession. Losses

[14] See the *American Banker*, November 3, 1956, p. 4.

[15] Reported security losses are not broken down to permit one to distinguish between losses incurred on swaps and losses incurred on net sales of Treasury securities. Nor can one determine the exact nature of security profits by looking at the reported data. All data used here are from various issues of the *Federal Reserve Bulletin*.

in 1954 amounted to only $59 million as banks attempted to avoid the establishment of both losses and gains in the same year. The year 1955, by contrast, was a year of business expansion and general prosperity, and yet reported security losses amounted to $195 million. This represented the highest level of security losses experienced since 1935 when they reached almost $200 million. For the first half of 1956, losses amounted to $62 million as compared to $38 million in the first half of 1955. In both 1955 and 1956, losses were concentrated in the last half of the year. The year 1953, like 1954, was a loss year with security losses at $140 million and security profits at $35 million.

The large tax savings made in 1955 through bank sales of Treasury securities helps to account for the curious fact that reported taxable profits (and taxes) were less in the relatively prosperous year of 1955 than in the recession year of 1954. Taxable profits amounted to $804 million in the recession year of 1954 and only $691 million in the prosperous year of 1955. Member banks paid about $113 million less in income taxes in 1955 than they paid in 1954.[16]

The larger banks benefited the most in the establishment of security profits and losses. Figures for 1955 show that the large central reserve city banks in New York and Chicago (31 member banks out of 6,500 member banks) accounted for about one quarter of total security losses and charge-offs, $54 million out of a total of $195 million. About three hundred reserve city banks accounted for $70 million and roughly six thousand country banks for about $71 million.

In the 1954 recession the central reserve city banks accounted for about $30 million of security profits, which represented over one-fifth of total profits of $375 million. The reserve city banks accounted for $174 million and the country banks for $121 million.

In view of these figures one is confronted with a paradox. Not since 1946 have gross earnings on Treasury securities held by commercial banks exceeded the interest on loans.[17] Nevertheless, in the determination of net earnings after security losses, Treasury securities have become more important. In other words, banks apparently have not looked upon their Treasury security holdings strictly in terms of interest earnings. More and more, banks have resorted to the special trading practices described above to establish capital losses in order to reduce their net taxable earnings.

ECONOMIC SIGNIFICANCE OF THE SPECIAL TAX POSITION OF COMMERCIAL BANKS

Groups Affected by Portfolio Operations of Commercial Banks

Commercial bank portfolio opera-

[16] It is sometimes implied that the principal reason the commercial banks paid less in taxes in the prosperous year of 1955 than in the recession year of 1954 lies in the security losses established in 1955. This is not strictly correct. The consolidated statement of all member banks shows reported losses and charge-offs of $195 million, a sizeable amount indeed. However, transfers to reserves amounted to $266 million and represented, therefore, the largest single adjustment made. These transfers also reduced net income by the full dollar amount of the adjustment.

[17] In 1946 gross earnings on Treasury security holdings for all commercial banks stood at $1.1 billion as compared to $0.76 billion on loans. In 1955, the figures stood at $1.1 billion and $3 billion on Treasury security holdings and loans respectively. Rising interest rates accounted for the fact that gross earnings on Treasury securities did not fall in absolute terms in spite of the heavy liquidation of bank-held Treasury securities which took place from 1946 to 1955.

tions in Treasury securities and the associated tax effects are of interest to others than the commercial banks themselves. Patently, these operations are of interest to the Treasury and non-bank taxpayers from the viewpoint of their revenue effects. They are important to bank shareholders from the standpoint of intelligent interpretation of bank statements and the investment status of bank stocks. They are of interest to investors, dealers, and the Federal Reserve banks as they bear on the market behavior of Treasury securities and related money markets. Finally, they are of interest to the economist as they bear on the general level of economic activity.

The U. S. Treasury. It is impossible to state how much revenue the Treasury may have foregone because of the stock-in-trade option afforded banks in the treatment of security losses. The reason is that banks might have been very much more reluctant to sell at substantial losses in the absence of this preferred treatment. They would have had to offset capital losses against capital gains or carry the loss over future years, but this would have afforded them a net deduction against income of only 25 per cent instead of 52 per cent. Assuming, however, that they would have sold as much without the special tax treatment, the Treasury estimated that in 1953 it forewent about $53 million in taxes. Probably the savings would have been very much less (as the Treasury, itself, suggested), for it is to be doubted that the commercial banks would have sold as much without this special tax treatment. These were the only estimates provided by the Treasury as of December, 1956, but on the same assumptions, the estimated revenue loss would represent a much larger amount for the years 1955 and 1956 since commercial banks engaged more heavily in loss operations.[18]

Bank shareholders. From the viewpoint of the intelligent interpretation of bank statements and the analysis of the investment caliber of bank shares, the tax loss operations are extremely significant. The investment analyst should not make the mistake of concentrating his attention on reported earnings after taxes in those years in which heavy tax losses are established. Net profits, as previously shown, amounted to only $691 million in the prosperous year of 1955, and yet stood at $804 million in the recession year of 1954. From the longer-run viewpoint, this temporary decline in net earnings must be interpreted to mean bigger earnings over future years (other things equal). This is true for three principal reasons. First, the sales afforded immediate tax relief. Second, the securities acquired by way of swaps afford future capital gains taxable at only 25 per cent. Third, the new loans and investments put on the books by way of reinvestment of the proceeds of the security sales in 1955 and 1956 represent higher yielding assets than previously afforded by the securities sold. All in all, then, the security losses, which make for a poorer immediate showing on bank statements, should

[18] The estimate for 1953 is based on the data from the corporate *Statistics of Income* which showed $197 million of losses resulting from sales of securities other than capital assets by banks with net incomes over $25,000. These losses afforded them about $102 million in tax savings (52 per cent of $197). In the absence of ordinary loss treatment they could have enjoyed tax savings of only $49 million (25 per cent of $197). The difference between the actual savings ($102 million) under ordinary loss treatment and the savings which would have been made under capital gains treatment ($49 million) accounts for the Treasury estimates of taxes foregone of $53 million.

For a review of these estimates, see United States Congress, Joint Economic Committee, *Monetary Policy, 1955-1956*, Hearings before the Subcommittee on Economic Stabilization, Eighty-fourth Congress, Second Session, December 10 and 11, 1956, p. 113.

spell out an improved earnings picture over subsequent years.[19] However, from the relatively poor showing of the price history of bank stocks, it does not appear that these factors were given the attention they deserve.

Market Behavior of Treasury Securities and the Portfolio Operations of Commercial Banks

Since 1945 the commercial banks tended to buy and sell Treasury securities in large volume in periods of business contraction and expansion respectively. The pressures thereby exerted on yields of Treasury securities is the basis for what has been described as the "inherent instability" of the Treasury security market.[20] It may be that the special tax position of commercial banks further contributed to the observed instability of this market. The reasoning is that sellers of Treasury securities (principally commercial banks) are not penalized nearly so much as others when they are obliged to sell at a loss. Non-bank investors must absorb 75 per cent of security losses; commercial banks (in the 52 per cent tax bracket) must absorb only 48 per cent of security losses. It would appear, then, that commercial banks would be very much less reluctant to sell than they otherwise would be in the absence of ordinary loss treatment. This, in itself, would tend to exert considerable pressure on Treasury security prices. On the other hand, they may be further encouraged to buy in time of recession if they know in advance that they will be able to sell, if necessary or desirable, at stock-in-trade losses or capital gains. This kind of safe psychology could very well make for more aggressive buying and selling in times of recession and expansion respectively, and, in turn, could help to account for a more volatile Treasury security market.

[19] The Association of Reserve City Bankers argued for an increase in bad debt loss reserves which would permit commercial banks to build maximum aggregate reserves equal to 10 per cent of loans outstanding as of the end of the year. They argued that the maximum amount which they should be permitted to deduct from taxable income and set aside as an addition to reserves be raised to 1 per cent of loans for any one year.

One of their arguments was that the ratio of net profits after losses, other adjustments, and taxes to average total capital accounts stood at only 7.9 per cent for 1955, which was "clearly lower than the earnings of most other industries."

While there may be good reasons for boosting loss reserves, it does not appear that pleading poverty on the basis of the operations in 1955 is a good one. As stated in the text, 1955 represented a loss year for banks. Losses were deliberately established to reduce reported net profits for tax purposes. The effect of such operations is to improve substantially the profitability of banks over subsequent years as well as to afford them an immediate tax savings.

The arguments of the Association of Reserve City Bankers are summarized in the *American Banker*, January 9, 1957, p. 26.

[20] Dr. Charles R. Whittlesey, professor of finance and economics of the University of Pennsylvania suggested that the Treasury security market might be inherently unstable in an unpublished article written in 1949: "Federal Reserve Policy, 1945-1949," p. 14. See also Charles R. Whittlesey, *Principles and Practices of Money and Banking*, Revised edition, 1954, p. 398.

SUMMARY AND CONCLUSIONS

After 1939 commercial banks were afforded a two-way tax option which allowed them to treat most of their Treasury security holdings as stock-in-trade for short-term or long-term loss purposes and capital assets for long-term gain purposes. This option led to significant changes in the character of the portfolio operations of banks and to a greatly increased volume of trading in Treasury securities. The tax operations help to explain the curious fact that reported net earnings (and taxes) of commercial banks were less in the relatively prosperous year of 1955 than in the recession year of 1954. They help to ex-

plain why the security profits established by banks in the 1954 recession were the highest in the entire history of the Federal Reserve System.

Tax swaps in Treasury securities (in which commercial banks buy and make offsetting sales of Treasury securities with no necessary change in total holdings) permitted banks to enjoy substantial tax savings in the postwar years. The larger banks were the chief beneficiaries; at the same time these operations meant loss of revenue for the Treasury.

The two-way tax option may have encouraged banks to engage more aggressively in net purchases and sales of Treasury securities. This aggressive behavior, in turn, may have added to the observed instability in the market prices (yields) of Treasury securities in the postwar years. The heavy sales made in 1955 and 1956, and in other periods of rising production and loan demand after 1945, were made at substantial losses. However, banks could treat these losses as ordinary operating expenses. Furthermore, these losses were completely consistent with long-run profit maximizing objectives as long as banks made loans which yielded enough to make up for the sales losses (less the tax savings immediately enjoyed on the losses). It is to be doubted that banks would have been as aggressive sellers over these years in the absence of the preferred loss treatment. At the same time, the heavy purchases made in the 1949 and 1953-54 recessions were made with the comforting knowledge that the issues acquired could subsequently be disposed of as stock-in-trade or capital assets—at the option of the banker.

SOME EMPIRICAL EVIDENCE OF TAX INCIDENCE *

ROBERT P. COLLIER †

ALTHOUGH there have been many pleas for more realism in economics, the struggle to give precise, meaningful, empirical content to the variables used in theoretic formulations has been long and difficult. Hence one more attempt to explore the possibilities for empirical verifications of economic theory may not be amiss.[1]

The purposes of this paper are twofold. The first is to delineate that part of tax incidence theory which is empirically testable from that part which is not. The second is to illustrate this distinction by describing one particular attempt to test the empirical validity of conventional tax incidence theory.

Testing the Validity of Economic Theory

Just how may the validity of economic theory be tested empirically? There are many ways, and there are many degrees of verification possible. If experimental conditions can be so controlled that the conditions which are assumed in theoretic analysis actually exist, a simple comparison of theoretic predictions with actual experience can confirm with a high degree of certainty the empirical or pragmatic validity of certain hypotheses. Of course, there is the difficulty, or even impossibility, of ascertaining what the empirical data *are* even for operational hypotheses.

Other hypotheses, however, are of a non-operational nature so that they cannot be tested by an appeal to experience. If, as is often the case in economics, the actual conditions are only an approximation of those assumed in the theoretic analysis, the coincidence of theoretic prediction and empirical fact becomes much less trustworthy proof of validity. In such a case, empirical "verification" becomes a matter of probability. Consistent and repeated agreement between theoretic prediction and observed behavior builds confidence in the empirical validity of the theory, but it can never give certain proof of infallible predictability in a setting of plural causes and complex relationships. As long as theoretic analysis concerns itself with a general tendency or propensity for certain responses to occur, we must recognize that influences extraneous to the theory may determine the actual outcome despite the existence of the predicted forces. Economics and the other social sciences need not continually apologize for this handicap, for it is only a matter of minor degree which distinguishes them from the phy-

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[1] Donald F. Gordon, "Operational Propositions in Economic Theory," *Journal of Political Economy* LXIII (February, 1955) 150-161; Leo Rogin, *The Meaning and Validity of Economic Theory*, (New York: Harper, 1956) pp. 1 ff.; Paul A. Samuelson, *Foundations of Economic Analysis* (Cambridge: Harvard Press, 1948) pp. 4 f.; Elmer Fagan, "Tax Shifting and the Laws of Cost," *Quarterly Journal of Economics* XLVII (August, 1933) 680-710.

sical sciences.[2] Even in this realm of probability rather than certainty—where economic functions become bands of probability, and where psychologic thresholds, habit, inertia, ignorance, and irrationality are recognized as inherent in human behavior, hypotheses can be disproven, or theories shown to be incomplete, by non-agreement with the facts if the range of disagreement exceeds the range of uncertainty.

Finally there is the realm of pure theory, in which the concepts are abstracted from the real world to such an extent as to be non-operational and non-testable by empirical experimentation. Here theory can only be tested for logical consistency or formal correctness, and the validity of a theory must be taken on faith either in logical consistency *per se* or some other authority. Here empirical validity cannot be confirmed, and examination of the realism of the individual assumptions may be the closest approach possible to empirical proof. These areas of pure theoretic analysis call for mental rigor of the highest order and are essential in describing complex social relationships and in pointing the discipline toward new practical advances, but they are not capable of empirical proof and probably never will be. Economics is a relative science, however, so the limitations of empirical testing are relative to our knowledge and other resources and thus change over time. Some part of what is non-testable or non-operational today may well be tested tomorrow or in the more distant future.

At present, tax incidence theory is being formulated with many different degrees of abstraction from practical experience. Without implying which type of theorizing will be most fruitful, or at which of various levels the sinners will ultimately perform, we can arrange current tax incidence studies in terms of empirical content and testability. At one extreme are the deductive, pure theorists, settled in the "armchair"; at the opposite extreme are the inductive, pure empiricists stuffing data into a calculating machine or electronic brain. The most promising path lies somewhere between these two groups of straw men.

Currently popular with the pure theorists working in the field of tax incidence is the extension of conventional theory through the use of general equilibrium analysis.[3] This approach is non-operational, non-testable, in the extreme. The Rolph re-examination of excise tax theory, for example, has no shred of supporting empirical evidence and probably never will have. The only validation possible for this theoretic system is to test it for: (1) logical consistency or formal validity and (2) the relevancy of the economy which is circumscribed by the assumptions, *i.e.* is this theory describing anything of significance in the real world or are the assumptions so restrictive that the system is fit only for mental gymnastics?

[2] Where is the physicist who can empirically prove the universal law of gravitation or the expanding universe theory; the geomorphologist who can empirically prove the pattern of the retreat of slopes; the meteorologist whose predictions are certain rather than probable? Even in the more exact physical sciences the degree of uncertainty and the lack of empirical proof increase as the frontiers of knowledge are approached.

[3] For example, Earl R. Rolph, "A Proposed Revision of Excise Tax Theory," *Journal of Political Economy* LX (April, 1952) 102-117; John F. Due, "Toward a General Theory of Sales Tax Incidence," *Quarterly Journal of Economics* LXVII (May, 1953) 253-266; J. A. Stockfisch, "Excise Taxes: Capitalization-Investment Aspects," *American Economic Review* XLIV (June, 1954) 287-300; Paul Wells, "General Equilibrium Analysis of Excise Taxes," *American Economic Review* XLV (June, 1955) 345-359.

Ranking next in paucity of empirical content is the type of aggregative incidence imputation of Musgrave, Tarasov, or Colm.[4] In these systems, which purport to describe the real world about us, the incidence of various taxes is merely assumed, for the most part on the basis of traditional theoretic partial-equilibrium analysis. Then the total tax burden is computed by applying this assumed incidence to the empirical evidence of the distribution of income and wealth in the nation. Here again the possibility of empirical testing is very limited—either the assumed incidence pattern is correct or not, which can be decided only by one's faith or lack of faith in the validity of the crucial incidence assumptions; or the statistical facts, estimates actually, of the population, income distribution, and so on are correct or not. There has been no direct empirical testing to confirm or deny the validity of the incidence pattern finally arrived at; the conclusion follows inevitably from the assumptions and is no more valid than the assumptions.

At the opposite extreme is the group of empiricists who let the facts speak for themselves. Illustrative of this type of work are the informative Federal Reserve surveys on consumer behavior and personal income tax redistribution effects.[5] Historic facts, data from actual market transactions, the accounts of individual firms and families, and so on, can give an empirical basis for saying something about the incidence of the corporate net income tax.[6] While these ex-post facts are clearly empirical evidence, there is always the question as to precisely what they prove or what relationships they illustrate. Also, since the incidence of a tax is evidenced by the difference between what *is* and what *would be* in the absence of the tax, it is manifestly impossible to simultaneously establish both end points of incidence in the experience of the real world. Under even the most favorable conditions one extreme must be held constant by assumption, or be assumed to vary in a predictable fashion, while the other is measured by actual experience. The assumption must be made either: (1) that the past will continue in some predictable fashion into the present, except for a change in the tax, or (2) that another area or industry is similar, except for the tax, to the one under study and thus furnishes a "control". Even here, incidence depends upon the *assumption* of stable functional relationships and can never be determined entirely by empirical market data.

Another popular variant of the empirical approach is to ask businessmen their opinions of the facts rather than to examine the market data directly.[7] This obviously has a "practical" appeal

[4] Richard A. Musgrave, J. J. Carroll, L. D. Cook and L. Frane, "Distribution of Tax Payments by Income Groups: A Case Study for 1948," *National Tax Journal* IV (March, 1951) p. 1; G. Colm and H. Tarasov, *Who Pays The Taxes*, T.N.E.C. Monograph No. 3 (Washington: U.S. Government Printing Office, 1940); Helen Tarasov, *Who Does Pay The Taxes*, (New York: Social Research, 1942); Gerhard Colm and Haskell P. World, "Some Comments on Tax Burden Comparisons," *National Tax Journal* V (March, 1952), p. 1.

[5] One such example; *Federal Reserve Bulletin*, XXXVIII, No. 9 (September, 1952) 979.

[6] Gerhard Colm, "The Corporation and the Corporate Income Tax in the American Economy," *American Economic Review* XLIV, No. 2, (May, 1954) *Papers and Proceedings*, p. 486; or W. L. Crum, "The Taxation of Stockholders," *Quarterly Journal of Economics* LXIV, (February, 1950), p. 15.

[7] National Industrial Conference Board, *The Shifting and Effects of the Federal Corporation Tax*, (New York: National Industrial Conference Board, 1930); Paul W. Ellis, *Effects of Taxes upon Corporate Policy*, (New York: National Industrial Conference Board, 1943); Lewis H. Kimmel, *Taxes and Economic Incentives*, (Washington: Brookings Institution, 1950).

for the business community, but the conclusions are no more valid than the individual opinions, no better than the assumptions used by the individuals questioned. What the experiment proves, at most, is what the particular businessmen questioned *think* is the incidence pattern—not what the incidence itself *is*. The hope that an aggregate average of opinion will be more valid than the opinion of a single theorist rests upon two questionable assumptions: (1) that the opinions are ranged in a distribution about the correct answer so that individual errors will cancel out in averaging, and (2) that there is a general "law" of incidence applicable within the entire industrial areas, the opinions from which are grouped together. Kimmel's study shows clearly that opinions differ markedly among industries.[8] Furthermore, business opinion regarding the incidence of the corporate net income tax shows a distinct change over time. Is the actual incidence changing because of rate differences, awareness of the possibilities of shifting, changing capital structures, changing pricing methods, and so on, or are businessmen gradually becoming more aware of the actual incidence, or on the other hand are they losing awareness? What part is to be assigned to changes in incidence and what part to a lag, a change, or incorrectness in opinion? This is of course an area in which "wishing will make it so" within limits. If the consensus among businessmen is that the corporate net income tax can be shifted to the consumer, they will try to shift the tax and will undoubtedly shift more of it than if the opposite opinion prevails. While such studies have an undoubted value and contribute much interesting information, they fail to prove the incidence of taxation, just as an opinion poll may fail to answer correctly the far simpler question, "which of two men is to be the next president?"

A middle ground between pure theory and pure empiricism is represented by those scholars who accept the theoretic framework and attempt to inject empirical content by determining the values of individual theoretic variables, *i.e.* putting facts into the theory. This fusion of empirical testing with theoretic orientation has many followers.[9] This blending of theory with empirical data is the approach which will be followed here.

The Red Cedar Shingle Industry and Tax Incidence

The particular industry chosen in which to test the validity and applicability of traditional tax incidence theory is the red cedar shingle industry of the Pacific Northwest. This interesting industry affords a striking example of pure competition. Of the 150 significant sellers, the four largest account for almost one-fourth of production but do not dominate the market. In addition there is a fringe of well over 100 small, part-time operators, plus a potential reserve of about 50 defunct mills, which stand ready to enter the market if the price is right. As might be inferred from the large number of sellers, entry

[8] Kimmel, *op. cit.*, pp. 29 f.

[9] To mention only a few: J. Fred Weston, "Incidence and the Effects of the Corporate Income Tax," *National Tax Journal* II (December, 1949) 300-315; Carl Shoup, "Incidence of the Corporation Income Tax: Capital Structure and Turnover Rates," *National Tax Journal* I (March, 1948) 12-17; George J. Stigler, "The Limitations of Statistical Demand Curves," *Journal of American Statistical Association*, (September, 1939) 469-481; Morris Beck, "Ability to Shift the Corporate Income Tax: Seven Industrial Groups," *National Tax Journal* III, (September, 1950) 248-256.

is easy. The capital requirements are low, and the major factor inputs, about equal parts of labor and logs, are readily available in the United States. In the Canadian half of the industry, a logging cartel acts as a partial bar to the entry of new firms, so that the fringe of small firms is much more abbreviated north of the border. Over 660 firms buy shingles as part of their wholesaling of building materials with no significant concentration of power on the buyers' side of the market; more than a third of the sales, however, are transacted in Seattle. In addition, many large contractors, retail lumber firms, and local builders buy directly from the shingle mills. There is a high degree of expertness in the market, strengthened by an exact and objective grading system which applies to all cedar shingles. Accurate, current, objective information is widely available on prices, current production, and even estimates of future production. The free operation of supply and demand, expressed in bids and offers, narrows " the market price " to a range of $.10, plus or minus, on a price of about $9 per square, except during periods of unusually rapid change. Finally, there is no attempt made by either buyers or sellers to stabilize this freely fluctuating market price. While this example is clearly not perfect competition, which is impossible in the real world, the red cedar shingle industry offers a truly unusual illustration of pure competition.

Taxation can impinge upon the economy in many ways. Most business taxes, however, can be categorized into those which influence: (1) variable cost, (2) fixed cost; and (3) net income. Common business taxes which illustrate these three types are: (1) the payroll tax as a variable cost; (2) the property tax as a fixed cost; and (3) the corporate net income tax as a drain upon net income. The incidence of each of these taxes will be tested empirically in the red cedar shingle industry.

The starting point for an empirical investigation of tax incidence must be theoretic, for only by a theoretic analysis can one identify the pertinent questions to be asked, the essential facts to be verified, and the hypotheses to be tested. The first step in the testing of the incidence of each tax is to identify the predictions of the accepted theory and bring them into juxtaposition with the available empirical evidence. Following the custom common in accepted incidence theory, this study is limited to partial equilibrium; it will deal primarily with price effects of the revenue extraction upon the buyers and sellers in the shingle market and related markets. The theoretic predictions to be tested are drawn from conventional price theory, since only by identifying the limitations of conventional theory can the necessity of modification or amplification be shown.

The effects of the expenditure of the revenue are expressly omitted and with good reason in addition to precedent. The effects of the expenditure clearly cannot be fully encompassed in partial equilibrium analysis. Also, even in the broader frame of general or aggregative equilibrium the consequences of expenditure are not inexorably linked to a particular source of funds. If tax theory is eventually to be applied to actual policy, the primary tax problem is that of analyzing *alternative* methods of finance for any desired expenditure program. Determination of the optimum level and timing of expenditure is a separate problem. While the effects of the revenue extraction and of the expenditure program are both important, they

are not linked in pairs with a particular dollar of revenue flowing into a particular dollar of expenditure. Each problem has an ample supply of complications of its own, so the analysis is best separated.

The second step is to fill in the institutional setting of the industry with historic fact in order to sharpen intuition and avoid being misled by institutional peculiarities which may lie hidden in the complex reality. To this end, all readily available published data on prices, costs, production, tariffs, imports, exports, *etc.* of shingles were consulted. In addition, numerous shingle mills were visited and the production process was carefully discussed with owners, sawyers, shingle weavers and accountants.

Finally the market behavior of individual firms in the industry was studied. This was done in two ways: by interview and questionnaire.

Primary reliance was placed upon personal interviews. In the study of an influence at once so nebulous, so diverse, and so all-pervasive as taxation, subtlety of meaning and precision in the choice of answer are often lost as a business executive attempts to accomodate an inquiring academician by describing business behavior or psychology. The direct personal interview lessens the danger that differences in terminology and usage may result in answers which convey an inaccurate picture of reality. Also a 100 per cent response from a small but select sample may be more truly representative and valid than the incomplete response from a much larger sample in answer to mailed questionnaires. The personal interview, of course, is not without its own weaknesses as a source of empirical data. The inclination to give the desired answer, the possibility of leading questions, and the powers of suggestion and association are all well known. While the reader can never know exactly how the questions were introduced, or how tonal inflections might have altered the meaning of the printed words, the interviewer himself is in an unusually favorable position to grasp the precise meaning intended.

Executives from 14 producing firms and two trade associations were interviewed, during 1952, some of them several times. This selected sample contained firms representative of all types and sizes and accounted for 19 mills containing 187 machines or 32 per cent of United States capacity. The sample was purposely limited to domestic firms and was weighted toward the larger producers, who, while a numerical minority, account for the larger part of shingle production. The executives were questioned about their motivation, costs, behavior, and reaction to the various taxes rather than being asked to state their opinions regarding incidence *per se*. While these lumbermen had well defined opinions about their own behavior and costs, most of them had far too many entrepreneurial functions to ponder to develop a clear cut opinion regarding the incidence of various taxes as distinct from their effects, impact, pressure, *etc.* In fact, half of them reported that they did not consider any tax when planning operations; they merely lumped them all together as " burden " or " overhead ".

To supplement the interview program, a three-page questionnaire was mailed to 120 additional shingle producers. Its purpose was to sample the Canadian half of the industry and to include the preponderance of the industry for certain questions. There was a 31 per cent response to the questionnaire

with no evident bias.[10]

But let us proceed with the testing. How completely can we test empirically the incidence of the payroll tax?

Payroll Tax

In traditional price theory, a general payroll tax upon business is primarily an addition to variable cost, which would affect supply in both the short and long-run. Thus payroll taxes, properly defined, may be used to illustrate the incidence of taxes, or other cost influences, which alter the direct cost of production.[11]

The predictions of conventional theory regarding the incidence of payroll taxes in pure competition offer " no general rule " but rather a series of special cases in which the incidence varies between the buyers' and sellers' side of the market depending upon the relative slopes of the supply and demand curves involved.[12]

Lacking direct empirical evidence, it will be necessary, in order to test the empirical validity and practical applicability of conventional incidence theory, to estimate or determine the relevant slopes of the demand and supply curves since in this case they are the determinants of incidence for such a tax.

The theoretic concept of a single, nation-wide, demand function is quite appropriate and meaningful for the red cedar shingle industry. The sellers are concentrated in a relatively small geographic area in the Pacific Northwest while the buyers are scattered in an irregular fashion over the entire United States and Canada. The general market price is quoted F.O.B. mill. Thus a slight variation in mill price serves to offset differences in transportation cost and to equalize the delivered price from different sellers to any one buyer. It is of course the delivered price which the buyer considers, while it is the mill price with which the sellers are concerned.

Deductive analysis of the situation suggests that the demand for cedar shingles is highly inelastic. Roofing, as a whole, is an intermediate good with a derived demand, whose price represents only a very small fraction of the total price of the final product. If the important short-run determinants of the sale of roofing, such as the number, size, style, and location of houses built and repaired, are given, changes in the price of roofing would have but little effect upon total roofing sales. In the long-run, adjustment to rising prices for roofing would probably appear as a tendency, in the designing of houses, to economize further on roof covering.

Since the total sale of roofing is relatively unresponsive to price changes, the demand for cedar shingles will be elastic only if its share of the roofing market is responsive to shingle price changes.

[10] The National Industrial Conference Board Survey in 1928 sampled its own subscribing firms, but even with a follow-up letter achieved only a 7.3 per cent response to the questions regarding tax shifting, *op. cit.*, 153-4.

[11] Since this study is concentrating upon business behavior, only that portion of the payroll tax is studied which is normally considered a business tax. Conventionally, the Social Security contribution is considered to consist of two distinct parts: (1) an excise tax upon business, (2) a levy upon labor itself in which benefit and burden are taken to be apparent. In the following discussion, the term payroll tax will be used as synonymous with a general wage tax. In the case of the red cedar shingle industry, this is very nearly a true picture of the business excise portion of the tax. Cf. Otto von Mering, *The Shifting and Incidence of Taxation* (Philadelphia: Blakiston, 1942) pp. 193 f; Herbert D. Simpson, "The Incidence of Payroll Taxes," reprinted in *Viewpoints on Public Finance*, ed. H. M. Groves (New York: Holt, 1947) pp. 134 f.

[12] Kimmel, *op. cit.*, 178-181; von Mering, *op. cit.*, pp. 44 ff.

This does not appear likely. At present cedar shingles account for less than 10 per cent of all roofing sales and are substantially more expensive, both to buy and to apply, than their major substitute, asphalt roofing. In addition, cedar shingles face a disadvantage in transportation cost and in insurance rates on the completed roof, as well as in greater product variation by size, shape, color, and texture. This suggests that in the present situation the sale of cedar shingles is relatively independent of their selling price so long as their price does not fall significantly below that of substitutes, and this does not appear likely. In fact, only personal preference, the need for variety in large subdivisions, and certain local advantages of shingles (longer life in areas of extreme heat, wind or hail) allow cedar shingles to retain even one-tenth of total roofing sales.

Can the existence of an inelastic demand curve for cedar shingles be confirmed by empirical evidence?

Direct empirical verification of the full demand curve is impossible since the concept of an instantaneous, reversible demand curve is non-operational; nevertheless, single points on the curve can be established by market data, or the slope of the demand curve at the market price can be tested indirectly via opinion of qualified business executives. Sellers and buyers alike reported that shingle sales are very unresponsive to industry-wide price changes since other influences are so much more important than price. Mr. Woodbridge of the Red Cedar Shingle Bureau, for many years the industry's spokesman and leader in the promotion of sales also stated that demand is inelastic. In fact, he was convinced that demand is so inelastic that if price were increased by one-third, but stable at that level, sales would actually increase, the stability of price more than offsetting the adverse effects of the increase. This evidence all supports the conclusion that demand is inelastic and that there is a high probability that at the market price a negative slope of perhaps five or greater is appropriate.

Considerably more empirical evidence is available regarding supply. The more practical nature of the supply function may in part explain and justify the emphasis put upon it by traditional tax theorists. In order to follow conventional procedure and construct an industry supply curve from the data of the typical firm in the red cedar shingle industry it is necessary to distinguish three types of representative firms in the domestic portion of the industry alone.

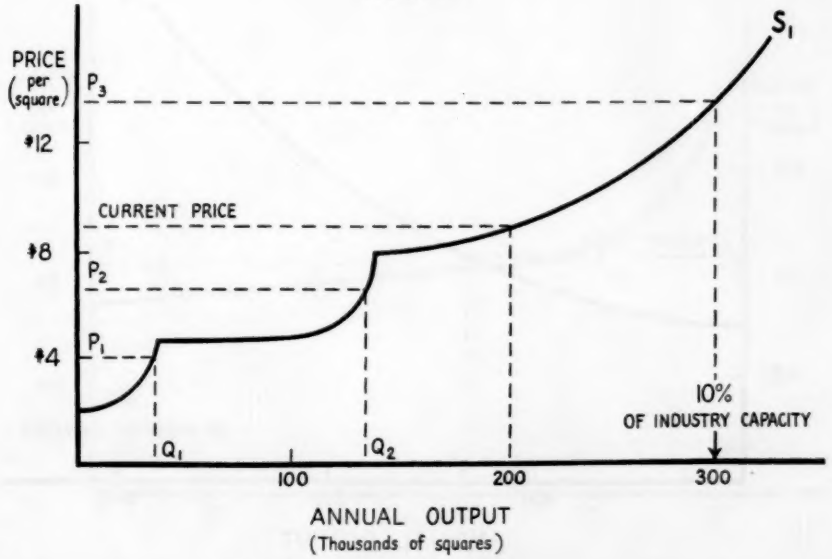
The first type of firm is one with a "combination mill" which produces cedar siding, lumber, shakes, and so on, in addition to shingles. Firms with combination mills account for less than 10 per cent of total current output and typically consider shingles as a "necessary evil" comprising only a minor part of their business. Shingles are produced in such firms primarily to: (1) use up short lengths of cedar log, box-hearts, or other cedar unfit for other uses, (2) produce the waste material, "spalt", used to fire the boilers that generate power for the entire mill, (3) offer better service to buyers by supplying a wider range of cedar products in mixed carload lots.

In a combination mill, the cedar used for shingles is fit for little else and may therefore be considered as virtually cost-free. These mills will continue shingle production as long as variable costs other

than log costs can be covered and will adjust the rate of output of the shingle department to the flow of scrap cedar accumulating from the operation of other departments. For this type of firm the minimum shingle price at which production will be profitable is approximately half that typical in the rest of the industry. Furthermore, since the scraps from the shingle sawing are burned to fire the boiler, shingles will be produced as long as the loss involved in operating the shingle department is less than the cost of buying the necessary power or alternative fuel. In view of these conditions, the combination-mill firms were only answering as was to be expected when they unanimously replied that the price of shingles could not fall sufficiently low to cause them to stop shingle production entirely.

Not only is the supply of shingles from such mills relatively unresponsive to price decreases but also to price increases. If shingle prices were to increase markedly, it would appear to be profitable for such mills to divert cedar and labor from other departments or even to buy additional cedar logs. The executives involved report that this would not be done, however, since shingles are only one minor part in a multiproduct mix, the demand for which is closely integrated and derived from a common source—residential construction. Thus when shingle prices rise, the prices of the other joint products would also rise, and there would be no advantage in diverting resources to shingles. As direct empirical confirmation for this opinion, one can point out that even in 1950 when the price of shingles nearly doubled in the space of six months and many other mills operated three shifts, these mills did not even expand shingle production to one full shift.

FIGURE 1

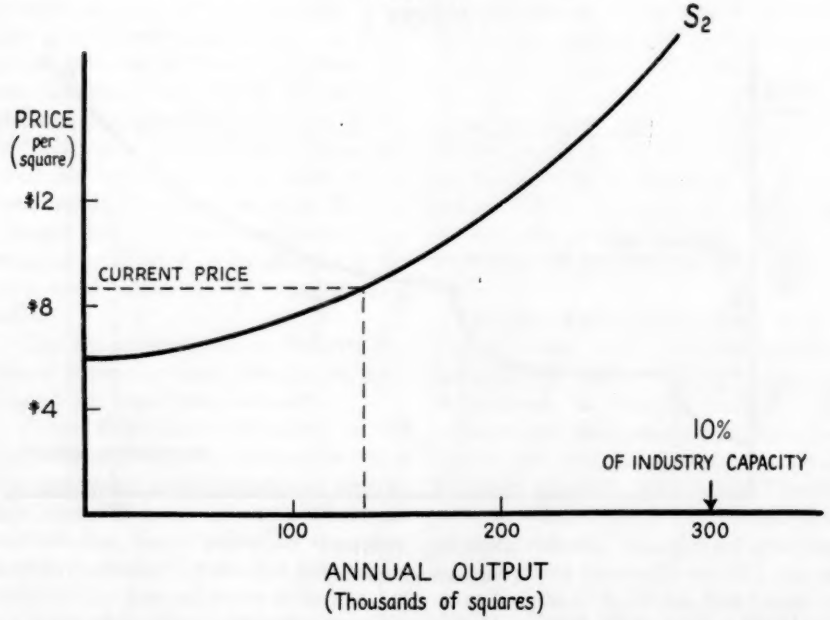


If the conventional *ceteris paribus* assumption is retained, so that the price of shingles is the only variable despite the empirical evidence of these multi-product firms, the supply curve for this type of firm would be illustrated by Figure 1.

At P_1, only sufficient shingles are produced, Q_1, to provide the by-product of generating power for the mill. At P_2, sufficient shingles are produced to use up the low grade cedar left over from other departments. At P_3, cedar logs are purchased at market prices directly for the shingle division or diverted from other divisions.

The second representative type of firm, which comprises the numerical majority of all shingle firms, both active and idle, is that with the minimum-sized, one-machine "straight" shingle mill. Over 90 per cent of shingle production is attributable to "straight" mills, of all sizes, producing cedar shingles as their only product, but less than 10 per cent comes from one-machine mills.[13] In this type of firm, the logs are bought in the open market and the labor is supplied by the owner and his friends, associates or relatives. A three man crew per shift is typical for a one-machine mill, one man for each stage of production.

FIGURE 2



The one-machine or family type of firm will produce as long as selling price covers log costs plus an acceptable wage. This wage may be lower than, equal to,

[13] Using the classification "1-4" employees in the 1947 Census of Manufacturers as a basis for estimating the performance of one-machine mills, they accounted for: 45.6 per cent of the number of active mills; 7.2 per cent of the total employment in the industry; and 6.9 per cent of the value added. U. S.

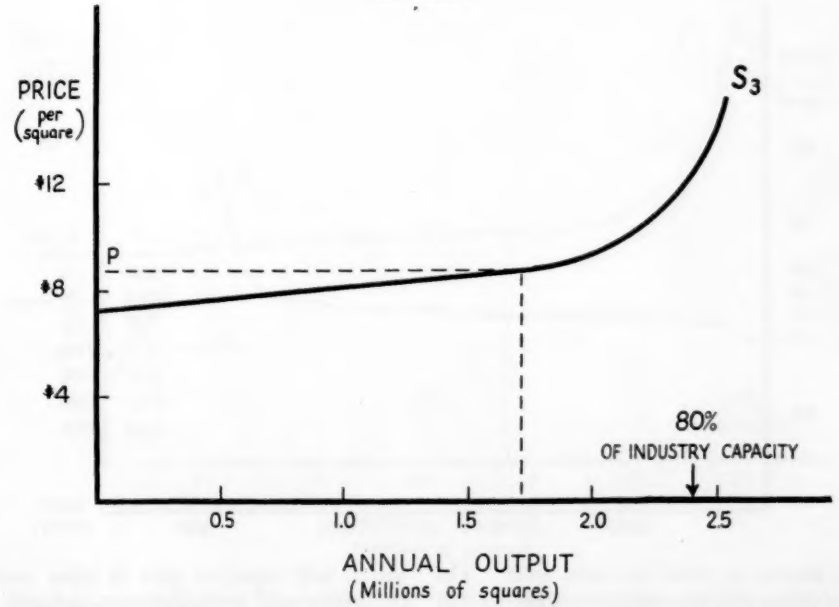
(See next page)

or higher than the union scale depending upon alternative wages available and the entrepreneur's eagerness to be his own boss. These firms constitute the very potent competitive fringe which will spring into production whenever shingle prices rise sufficiently. On the other hand, during slack periods there is a tendency for such small, transient, Schumpeterian entrepreneurs to grease their mills, shelter them from the weather, and seek employment elsewhere. Fixed or shut-down costs for this type of mill are reported to be negligible.

The supply forthcoming from this second type of firm would be of the type shown in Figure 2. In the one-machine mill, the first six-hour shift is often more productive per man than in larger mills. This is the consequence of highly skilled sawyers setting up their own operation to utilize their unusual dexterity in preference to working for hourly wages in a larger mill. On the second shift, which is uncommon in this type of firm, unit production costs are said to rise substantially, as much as 10 per cent, since hired labor must be used.

The third type of firm, one operating multi-machine straight shingle mills, is most nearly representative of the whole industry since it accounts for from 80 to 85 per cent of current productions. This type of firm reports relatively constant returns to scale, or average production cost that remains constant over a wide range of output. The productive process, at least in the last two stages, is highly divisible, built as it is around numerous identical machines, each manned by one skilled sawyer and re-

FIGURE 3

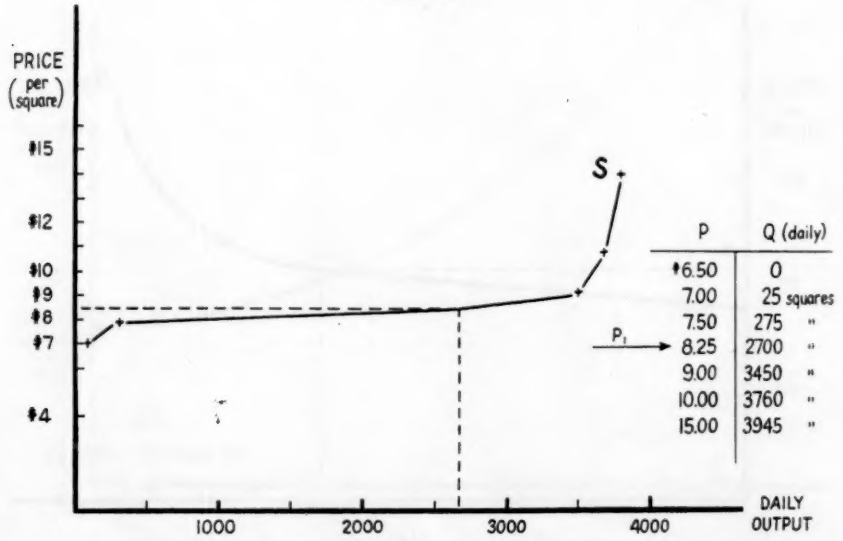


Department of Commerce, Bureau of the Census, *Census of Manufacturers; 1947* (Washington: Government Printing Office, 1949) II, 259.

quiring the services of one packer. Output can be varied widely without significantly altering average variable cost by using more or less machines while operating the mill a constant number of shifts. Some slight economies of scale can be achieved in the first stage of production and in other, miscellaneous, jobs.

A more significant change in cost for this type of firm results from the increase of output through the addition of a second or third six-hour shift. The addition of a second shift results in: (1) a decrease in unit overhead cost, (2) an increase in labor's hourly wage, (3) a decrease in the quality of labor, especially among the skilled sawyers, and most significantly (4) a saving in labor input, since one shift in certain minor jobs, swampers, firemen, *etc.* is sufficient to sustain production. These various influences affected firms with differing force, but with only one exception the executives from this type of firm reported that the second shift would involve slightly lower average total cost than the first. A decrease of $.10 a square, about 1 per cent of total unit cost, was the median change reported. Many mills reported that limiting factors, such as kiln capacity or availability of logs and skilled labor, prevented their operating three or more shifts. Among those who could operate more than two shifts, half reported that if labor and logs were still available even the addition of a third shift brought no significant rise in unit costs.

FIGURE 4



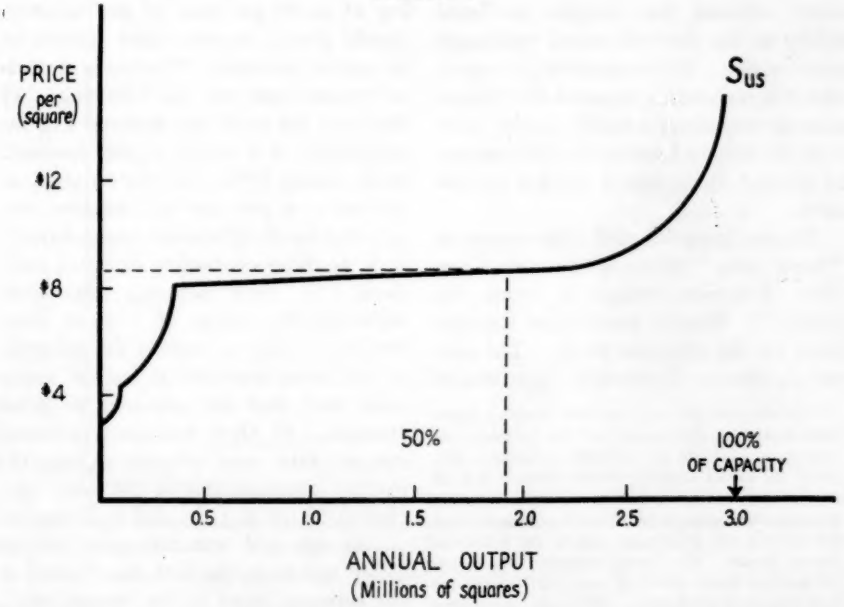
A careful study of the production process itself plus interviews with business executives and the mailed questionnaire data on cost of production led to the conclusion that the supply curve for this type of firm is approximated by Figure 3. The basic, *ceteris paribus*, assumption to freeze factor prices as a par-

ameter of sales is not realistic. Since both the major factor inputs are quite inelastic in supply, increased shingle output would quickly bring increased factor prices. This is suggested by the supply conditions of the two major inputs, but is guaranteed by the terms of the union wage scale. Not only is the hourly wage tied to the selling price of shingles of the preceding month, but also a premium is paid for second and third shift labor.[14]

In order to verify the estimated supply function based upon cost and production data, a supply function was constructed for the 16 such domestic firms which answered the mailed questionnaire completely. These executives were asked to specify their present rate of output at the going market price, the price at which they would cease production entirely, and their expected rate of output for a selling price of $9, $10, and $15 per square. The aggregation of their answers gives the supply function in Figure 4.

Since over 80 per cent of total shingle production in the United States comes from multi-machine straight shingle mills, the total industry supply function will closely approximate the supply forthcoming from this third representative type of firm. Aggregating the three types of firm produces an industry supply function for the United States as shown in Figure 5. The one-machine and combination mills only add an interesting quirk at the lowest end of the supply curve.

FIGURE 5



[14] The union wage scale in effect in 1950 included one cent hourly bonus for every four cents the selling price of shingles rose above $8.50 per square.

Within the normal range of price and output, this supply function is very flat and elastic but as capacity is approached the positive slope of the curve increases rapidly.[15] It is obviously impossible simultaneously to establish empirically both the demand and supply functions from market data of actual sales, except at the single point of intersection. During 1950, while the supply determinants appear to have remained relatively constant, demand for shingles oscillated wildly in the face of record residential construction. If the assumption is made that it was changing demand that caused sales to vary along a stable supply function, the supply function in this case can be plotted from actual market experience.

The market price used is that range of "most sales" reported by the *Crow Price Reporter*, which is issued biweekly.[16] Weekly prices were interpolated for the alternate weeks. The output figures are the weekly "per cent of potential capacity" operating as reported by the trade association, the Red Cedar Shingle Bureau. These data reflect the changes in output caused by altering the number of machines and the number of shifts but fail to show any alteration due to changes in output per machine per shift. Since the standard operating procedure is to vary the number of machines while using a fixed proportion of factors per machine, this survey, covering 85 to 90 per cent of the industry, should give a representative picture of the entire industry. The crude statistical process used was the following: (1) the price per week was computed or interpolated as a single figure for each week during 1950, (2) the output, expressed as a per cent of capacity, was adjusted for the obviously unusual weeks such as those containing national holidays, (3) these adjusted data were smoothed by means of a three week moving average to reduce the influence of stochastic variables as well as minor leads and lags in responses to price changes, (4) these smoothed, adjusted output data were plotted against the market prices existing at the time. Although there is a decided influence of the season and weather upon output (deer season in the fall, fire hazard in the summer, snow in the winter, *etc.*), these figures were not corrected for seasonal variation because the pattern for the last few years is so erratic. A more involved statistical treatment would only lend an appearance of precision to the analysis which the data themselves do not deserve.

The scatter diagram, shown in Figure 6, of adjusted, smoothed, percentage of potential machine-hour capacity actually operating, plotted against the interpolated or averaged market price for the

[15] In the past there has not been complete agreement concerning the capacity of the industry. As recently as 1942 the U. S. Tariff Commission estimated the annual capacity of the domestic half of the industry as twelve million squares. By 1945 they cut their estimate to six million squares. But this figure is still double that used by the Red Cedar Shingle Bureau. The Bureau estimates total potential machine hours, which in turn can be translated into squares of production. While the government figures are based upon the number of machines in existence, the Bureau also included other limiting factors such as seasonal variation, kiln capacity, *etc.* When translated into squares of production, the Bureau data indicates a total capacity for the industry of six million squares with the domestic mills having only half of this total. The Red Cedar Shingle Bureau data appear more realistic as well as being the only weekly source of production data.

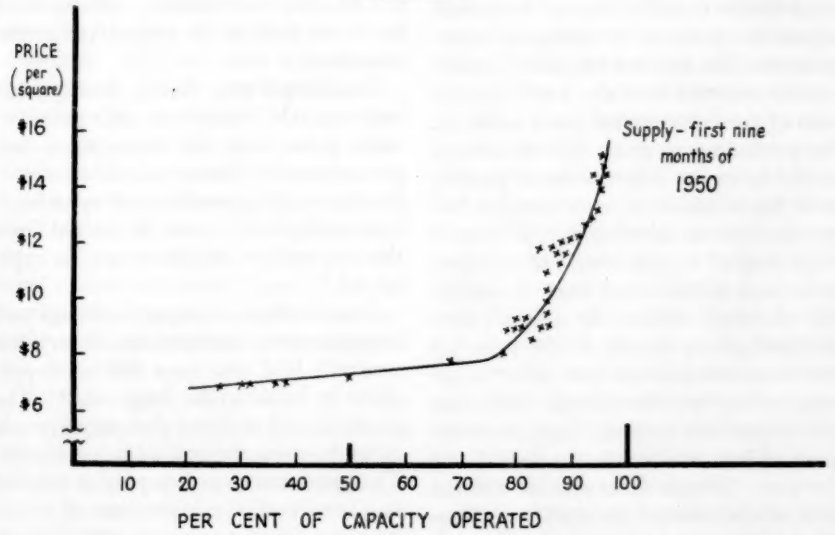
[16] Crow Publishing Co., *Price Reporter* (Portland) This was used in preference to the governmental data, which were monthly only, not complete, and appeared to be very sluggish in reflecting price changes. Cf. Bureau of Labor Statistics, Price Index Series No. 520-21, *Red Cedar Shingles*, Dry, Carload lots, 16 inch, FOB mill.

same week is compatible with both the industry supply curve derived from the cost data and that constructed from business opinion. The fit might be equally good, however, and just as realistic for a shifting series of monthly supply curves to reflect the feedback of market price into the factor prices. In October, 1950, for example, the wage-bonus resulting from the extremely high selling price of shingles in September, was $.67 an hour, or an increase of nearly 50 per cent in hourly labor cost.

There is considerable empirical evidence to support the thesis that the supply curve, within the pertinent range of prices, is highly elastic and perhaps has a slope as low as .1. With demand steeply sloped within the same range of prices, the incidence of the payroll tax will be predominantly on the buyer's side of the market. To be precise, if the slope of demand is in the neighborhood of —.5 and that of supply is .1, the incidence falls approximately 98 per cent onto the buyers' side of the market. At higher rates of output of course if the slope of the supply function increased as capacity was approached, more of the burden would remain on the sellers.

Thus in the red cedar shingle industry at least, there is considerable empirical evidence to give meaning to conventional tax incidence theory. The concepts are empirically verifiable, though demand remains rather nebulous, and if sufficient resources were employed, functions far more precise than those sketched here could be obtained. Even these functions define the range of possibilities sufficiently to allow us to say that, except at near capacity production, there is a very high probability that the payroll tax as here defined falls over 95 per cent upon the shingle buyers, with 98 per cent the most probable fraction.

FIGURE 6



The conventional theory is applicable, empirically verifiable, and does give us an answer far more precise in this case than Row-Fogo's " Goodness knows ".[17]

With such complete forward shifting there is little necessity for firms to attempt to shift the tax backward to the factors. Business opinion was unanimous in the view that no attempt was made to shift the tax in this direction, and the possibility of such backward shifting is remote. Labor is strongly unionized, and payroll taxes were reported to have never been a consideration in the annual negotiation between the union and management. The business executives unanimously reported that the fixed proportions of the factor inputs are so rooted in the production process that *no* change in the labor—machine ratio is possible even for increases in labor cost far larger than that involved in payroll taxes.[18] With regard to the other major input, cedar logs, there is small hope of successful shifting backward. Since most shingle logs are bought in the open log market in competition with other larger users of cedar, the shingle mills can exert very little control, if any, over the price of logs, which is set by supply and demand. Shingle firms provide a minor part of the demand for cedar, and supply is determined primarily by the production of fir and hemlock logs, since cedar is scattered sparsely throughout the other timber and is not logged separately.

Property Tax

In conventional analysis property taxation upon plant and equipment of business firms, almost without exception, would be classified as a fixed cost, and thus non-shiftable in the short-run. The speed of any tax shifting which is possible will depend upon how fast the price-determining cost responds to the imposition of the particular tax, and this in turn depends upon the type of tax applied. The shifting of a payroll tax, for example, or any other variable cost, will take place in the short-run while a tax which enters fixed cost can be shifted only in the long-run. In the long-run the incidence of such a tax becomes similar to that of the payroll tax in the short-run.

Traditional tax theory distinguishes between the incidence of property taxes upon land and those upon improvements.[19] Since land is relatively fixed in supply, general taxes upon land, it is usually held, cannot be shifted from the owners but may, however, be capitalized.[20]

Concerning taxes upon buildings and improvements, conventional theory has generally held that some shifting is possible, at least in the long-run.[21] The possibility of shifting the property tax depends upon the reduction of supply. The speed with which supply is reduced as a result of the imposition of a tax bearing upon property will depend upon: (1) the mobility of existing capi-

[17] This expression, J. Row-Fogo held, denotes the precision of tax incidence theory. Cf. Elmer Fagan, *op. cit.* pp. 680 ff.; J. Row-Fogo, *An Essay on the Reform of Local Taxation in England* (London: Macmillan, 1902).

[18] Obviously this opinion is based upon implicit assumptions limiting the range within which it is conceivable for factor costs to vary.

[19] S. E. Leland, *The Classified Property Tax in the United States* (Boston: Houghton, Mifflin, 1928) Chap. I. H. D. Simpson, " The Incidence of Real Estate Taxes," *American Economic Review* XXII (1929) p. 223.

[20] von Mering, *op. cit.*, p. 156—" Hence the general property tax cannot be shifted." Cf. Harold M. Groves, *Financing Government* (4th ed.; New York: Holt, 1954) 128.

[21] Groves, *op. cit.* 136.

tal within the industry, if disinvestment is taking place; and (2) the amount by which future investment in the industry is reduced below the level that would have resulted had investment not been diverted to relatively tax-free areas.

All of the cedar shingle executives interviewed considered the property tax as a fixed cost and very insignificant at that, so that empirical testing was difficult. Twelve of the 14 firms ignored the tax completely when planning operations. As a cost the tax was smaller even than fire insurance on the mill and typically was less than 1 per cent of total cost. The two who did mention the property tax as entering their considerations assigned it a very minor role in planning, primarily stimulating an attempt to hold down on inventory at tax assessment time each year. Inventory in this industry is normally very low anyway. Consequently, the property tax, being a fixed cost which is not considered in planning, appears to fall almost entirely upon the mill owner-operator in the short-run.

From the reported behavior of firms, if not from direct empirical data, it can be inferred that in the short-run the incidence of the property tax is on the owner-operator of the shingle mill just as predicted by conventional theory.

Traditional theory holds that in the long-run a property tax upon improvements can be shifted forward if price increases result from a reduction in supply as a consequence of the tax. The long-run results cannot be empirically tested, however, in this or any other industry, since at any given point in time certain factors will be fixed, and " other things " have not been equal sufficiently long for equilibrium, in the long-run sense, to be attained. This industry is an unusually favorable example in which to test the intermediate period, however, for a production function which remains constant for forty years is rather rare. During this period, output of the industry has been declining. There has been no major technological change in the production process requiring additional investment—no new machinery and no change in the fixed proportions of the factors. Excess capacity has been typical, and disinvestment has been taking place. The reduction in supply that has resulted over the years has been the result of market forces of much greater magnitude than the impact of the property tax. The limiting factor appears to be the inability of capital to move out more quickly. Since investment has been negative, it is difficult to see how the property tax could be shifted by reducing future investment in the orthodox fashion. Within the past 40 years the property tax does not appear to have been shifted, but in a sufficiently long time such shifting might take place. In the case of the true long-run, the tax burden would be divided between sellers and buyers on the basis of the relative slopes of supply and demand and, like the payroll tax, would fall mostly upon the buyers' side of the market.

In summary, conventional tax incidence theory regarding the property tax in this purely competitive industry has been shown to be verifiable and valid in the short-run. For the long-run the most that can be said is that the predictions of theory are not inconsistent with the most protracted data available.

Corporate Net Income Tax

The traditional theoretic prediction is that the corporate net income tax, especially in the case of pure competition, falls upon the net profit of the successful firms and cannot be shifted in the

short-run. Theory portrays the tax as falling primarily upon the tax-paying firm even in the long-run, with shifting limited to the extent that higher prices result from the decreased supply forthcoming as the result of tax-impaired investment in the industry.[22] Such shifting in the long-run, if it is to come about, is contingent upon: (1) a relatively tax-free area, either geographic or functional, to which business may allocate new investment; (2) the mobility of capital already existing within the industry, which limits the disinvestment possibilities; and (3) the overall reduction of investment as the result of a tax-produced decrease in either the ability or willingness to invest.

Traditional theory has not gone unchallenged. Divergent views are based upon; (1) substitution of general equilibrium analysis for the partial equilibrium of traditional tax incidence theory and (2) the substitution of a more "realistic" price theory for traditional marginalistic price theory.[23] One of the most important forms of this latter criticism is based upon the distinction between the concept of net income commonly used in tax accounting and that used in economic theory.[24]

In order to test the existence of forward shifting of the corporate income tax in the shingle market, the executives were asked: (1) Can you raise your price to shift the burden of an income tax? (2) Do you alter your rate of output as a result of income taxes? The answer to the first was unanimous—there was no shifting via direct price rises and no attempt at shifting. The only firm that changed any price as a result of the corporate income tax, though the price was not that of shingles, was a firm composed of an interlocking complex of several closely-held corporations that adjusted the prices of goods and services flowing internally among the corporations in order to minimize the corporate income tax liability. In two of the firms studied through interviews output was reported to be altered, at times, as the result of income taxes. The first of these firms owned its own timber and programmed the cutting over a long term. Obviously it would be to the advantage of such a timber-owning firm, which is rare in the industry, to curtail production during periods of high income taxation. The second firm was a partnership and thus came under the progressive personal income tax rather than the corporate income tax structure. In this firm, shutdowns for maintenance and repair were scheduled, when possible, to reduce the tax liability.

As another check on the behavior of these shingle firms, the executives were asked to enumerate and discuss the taxes, if any, that they considered when planning operations. Precisely half the firms reported that either all taxes were ignored entirely or were lumped into overhead costs. The remaining half recognized some taxes, *i.e.* payroll tax, as a cost of production. Only one firm, the interlocking complex of closely-held

[22] Edwin R. A. Seligman, *The Shifting and Incidence of Taxation* (2nd ed.; New York: Macmillan, 1899) p. 362; Kimmel, *op. cit.* pp. 19 ff; Weston, *op. cit.* pp. 300 ff; Richard E. Slitor, "The Corporate Income Tax: a Re-evaluation," *National Tax Journal* V (December, 1952) p. 289; von Mering, *op. cit.* pp. 208 ff.

[23] Richard Goode, "The Corporate Income Tax and the Price Level," *American Economic Review* XXXV (1945), 40-58; Kimmel, *op. cit.* pp. 20 ff; Duncan Black, *The Incidence of Income Taxes,* (London: Macmillan, 1939) pp. 122 ff; Weston, *op. cit.* 300-315; Robert P. Collier, "Cost Plus Pricing and Tax Incidence," *Proceedings: Western Economic Association* (1956) 49-52.

[24] Weston, *op. cit.* 307.

corporations, considered the corporate income tax when planning operations.

The corporate income tax appears to have virtually no influence in the short-run upon either price or output in the shingle market, so there is no forward shifting possible. What of the possibility of backward shifting? As discussed above, there appears to be little possibility of shifting any of these three taxes backward to the major factor inputs. Thus in the short-run the incidence of the corporate income tax appears to remain as predicted upon the firms producing shingles.

In the intermediate period the evidence is sparse but supports the view that conventional theory is both applicable and valid. True, five firms out of 14 interviewed reported that the tax rates caused them to defer or postpone investment,[25] but excess capacity is typical and has been for years throughout the industry. The possibility of shifting (via an increase in market price) that results from the reduction of supply that is attributable to a reduction in investment that results from corporate income taxation must be ruled out. Supply is already shrinking as fast as the mobility of existing capital will allow.

Even if tax rates higher than those which existed under the excess profits tax were imposed, the corporate income tax would remain unshiftable. When asked if higher tax rates would change their response, as suggested by Shoup, the executives, with only one exception answered that no additional alternative short of liquidation and retirement existed even in the face of substantially higher rates.[26]

[25] Only three out of seventeen American firms answering the mailed questionnaire reported this.

[26] Shoup, *op. cit.* pp. 12 ff. The only exception suggested that an attempt would be made to achieve greater efficiency in production before liquidating.

The empirical evidence of the historic rate of net profit realized in the industry reveals an average rate so low that the influence of the corporate income tax in the aggregate does appear small regardless of the rate structure applied.[27] With a negative rate of profit it is rather difficult to elicit much revenue, or response either, with a net income tax.

Another, semi-empirical, approach to testing theory is to explore the realism of the basic assumptions. In order to test this facet of theoretic analysis, the business executives were questioned as to the motivation behind the behavior of the firm. Of the 14 executives interviewed only three specified an aim other than maximum profit as the goal of the firm. One of these three answers was highly suspect because of marked inconsistencies.[28] The remaining two, both one-machine mills, were said to aim for " fair profit " and " fair profit and steady employment for the family." On the mailed questionnaire, the numbers reporting each aim were as follows: " Maximum profit before taxes "—4; " Maximum profit after taxes "—19; all other aims—3. The other aims reported were: (1) " Fair profits " ; (2) specific amounts sought both before and after taxes; and (3) " To retain maximum amount of funds generated for investment and improvements and to use low grade logs."

The executives were also asked whether or not the firm actually used marginal analysis *i.e.* whether costs were computed for marginal rather than average production. Only one executive con-

[27] U. S. Tariff Commission, *Report to the U. S. Senate on Red Cedar Shingles*, No. 149, Second Series (Washington: Government Printing Office, 1942) pp. 121-123.

[28] For example, although the goal of this firm was specified as maintenance of employment of their labor force, the firm was reported to cease operations as soon as selling price fell below average total cost.

tacted by personal interview reported, with a sly grin, that his firm actually used marginal analysis. This particular firm is one of the two largest domestic firms and was still paying an excess profit tax at the same time that large segments of the industry were shut down because of the cost-price relationship.[29] Eight of the 35 firms responding to the questionnaire reported that they distinguished between the marginal unit and the average unit. When questioned as to the relationship of costs and selling price that would lead to shutting down the mill entirely, the interviewed executives answered in the fashion classic with conventional texts. The most common expression used was that " the mill would be shut down as soon as the loss entailed in operating is larger than the loss involved in shutting down." This corresponds in conventional terminology with operation at prices below the level at which marginal cost intersects the lowest point in the average variable cost curve—*i.e.* the lower end of the supply curve. Shut-downs are quite common in the industry with many firms shutting down for as short a period as a week or ten days when selling prices dip temporarily.

Summary

From the preceding facts concerning firms in the red cedar shingle industry it may be concluded with some confidence that the basic assumption of profit maximization in traditional price and tax incidence theory is both realistic and accurate for this industry. Further, that the use of marginal analysis does give a realistic description of the behavior of these firms, and that some firms even use marginal analysis consciously and profitably. Finally, that quite aside from the realism of the assumptions, the theoretic predictions of conventional tax incidence can be tested with empirical evidence in the short-run and are valid.

What are the general implications which follow from this exploration? First, that there are significant parts of conventional tax incidence theory which can, under favorable conditions, be tested empirically. These are of differing degrees of testability, however, for while the supply conditions are capable of considerable empirical testing, the demand side of the market is much less so. Second, that there are significant areas in conventional tax incidence theory in which facts could conceivably disprove the theory but could never prove it. While theoretic predictions for the short-run, and even intermediate periods extending over decades, can be tested to some degree, long-run theory posits a situation which can never be duplicated in the business world and in which the tendencies or forces can never be isolated for empirical proof. Third, that under the favorable conditions to be found in the purely competitive red cedar shingle industry those parts of conventional tax incidence theory which could be tested empirically were found to be valid, with a high degree of confidence or probability. Finally, however, the inherent limitations of this type of theory have been evident. While short-run, partial-equilibrium pronouncements can be verified, if only by indirect inference from market data, those of considerably broader import cannot, *i.e.* the long-run and more general equilibrium. The chain of logical abstraction required becomes so lengthy

[29] This reply supports the thesis of James S. Earley, " Marginal Policies in ' Excellently Managed ' Companies," *American Economic Review* XLVI (March, 1956) 44-70.

and tenuous that testing by reference to experience becomes inconclusive. These incidence pronouncements must be taken upon faith in logical consistency, authority, ignorance, inertia, or what have you. If the full fruitfulness of general equilibrium analysis, or for that matter flow of funds accounting, input-output analysis, and so on, is to be realized in actual policy making and tax reforms, sufficient empirical content must be added to convince "practical" businessmen and politicians of the correctness of the predictions of incidence and effects. An exposition based on logical consistency alone may never be able to prevail over pragmatic and anti-theoretic prejudices. Conventional partial equilibrium tax incidence theory does contain operational concepts. It is phrased in business language so that when revenue is needed for a specific project in a specific institutional setting a convincing picture of the distribution of the burden can be drawn with some confidence and some public acceptance. This same degree of acceptance on the part of the citizen has not yet been won by the more abstract theories and may never be won until more evidence from within the realm of experience can be brought to bear upon predictions for specific tax problems.

OUR FEDERAL INCOME TAX SYSTEM— WHERE DO WE GO FROM HERE?

ROBERT S. HOLMES *

THE present federal income tax system, even as recently amended, is subject to practically universal criticism on the grounds that it is inequitable and interferes with the proper functioning of the American economy. While most people will agree that reform is in order, they are nevertheless far from agreeing as to what changes should be effected. The proposal made in this article is not new. However, it has received scant attention recently and since (in my opinion) it is the only approach which offers a realistic solution of the problems presented by the present tax structure, a brief on its behalf appears to be both timely and pertinent.

The existing federal income tax structure comprises (a) a straight non-progressive tax, usually 52 per cent, on the taxable income of corporations, and (b) a progressive tax on individual taxable incomes ranging generally from 20 per cent on the first $2000 to 91 per cent on the excess over $300,000 (or over-all rates between these brackets of from 20 per cent to 78.5 per cent).

The present proposal may be stated briefly as follows: All corporate income taxes should be eliminated, which would leave only the progressive tax on individual incomes. The income of natural persons, however, would include all corporate income. In other words, corporate income would not go untaxed but would be imputed in its entirety to the holders of corporate securities. Thus, a corporation having a capital structure of long term debt, preferred stock, and common stock would file an informational return with the Bureau of Internal Revenue, but would not itself pay income taxes. The holders of debt securities and preferred stock would be receiving interest and preferred dividends, and would, just as at the present time, file individual income tax returns including these items of individual income. The tax payer would also include in his return both the dividends received on his common stocks and in addition any net income of the corporation not distributed, allocable to the shares held by him.[1] The credits for dividends received, recently incorporated in the tax law, would of course be eliminated, since the excuse for such credits, double taxation, would have disappeared.

This proposal is consistent with the present method of taxing partnerships and individual proprietorships and for the reasons hereinafter set forth, the principle should be extended to the corporate form of doing business. This proposal was recommended by a Com-

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[1] Whether a company which was losing money, should have such losses imputed to its stockholders raises some interesting problems. It would appear that such losses should be limited, possibly to the investment of the stockholder in that particular stock. Otherwise, investment in losing companies might provide an unfair method of tax avoidance.

mittee of the National Tax Association in 1939. Their Final Report contained the following statement: [2]

> With two members dissenting, our Committee recommends that, in the effort to reach corporate profits for personal income tax purposes the use of the partnership method should be extended to the limits of its legal and administrative possibilities. However, considerable difference of opinion exists regarding what these limits are.

At the time when that recommendation was made the corporate tax was only 18 per cent as compared with 52 per cent today. The inequities and economic maladjustments, so clearly discussed in that Report, have been correspondingly compounded.

However, before examining these inequities, let us first examine some of the arguments which may be raised against making this fundamental change.

First of all, it will be argued, how can an individual pay an income tax on income he does not receive, but which is plowed back into the business as retained earnings? The answer is that a person who had very little income other than that imputed to him from non-dividend paying stocks might find it necessary to switch to dividend paying stocks or interest bearing debt securities to the extent necessary to meet tax obligations. It should be noted that this objection would have very limited applicability because few individuals would be in the position of receiving most of their taxable income in the form of imputed corporate earnings, particularly since the corporations would not now themselves be subject to income taxes. In other words, to the extent that corporate taxes are, under the present system, borne by investors, they could under this proposal be paid as dividends and thus be made available for taxes to be paid by the individual stockholders. Furthermore, since there would be no tax advantage (or disadvantage) to stockholders from the retention of earnings, many corporations would undoubtedly distribute a larger proportion of their earnings.

Another argument which may be made against this proposal is that it flies in the face of the corporate entity theory. This argument is a purely legalistic one. The fact is that a corporation is a legal fiction, and for tax purposes there is no valid reason why the government should not pierce the corporate veil, if there are good reasons for doing so. Certainly recent decisions in our courts indicate that no constitutional amendment would be necessary.

Finally, the objection may be raised that the administrative difficulties would be insurmountable because individuals would be unable to ascertain the amount of their taxable incomes. It is not too difficult for an individual to keep track of his cash receipts from interest and dividends, but quite a different matter for a person with no knowledge of accounting or finance to compute the amount of corporate retained earnings which should be attributed to him.

There are a number of answers to this point which add up to the proposition that the administrative difficulties are not only not insurmountable, but that they may well be less than exist under the present system of taxing both the corporation and the individual security holders separately. In the first place each corporation could send its security holders the necessary information. In the vast majority of cases this could be

[2] "Final Report of the Committee of the National Tax Association on Federal Taxation of Corporations," Robert Murray Haig, Chairman. (page 24). (Published by National Tax Association, Lancaster, Pa., 1939.)

in simple form and easily understood. The security holder would need only to multiply the number of shares held, by the per share earnings furnished by the company.

A tax withholding by the corporation similar to the present wage and salary withholding tax could also be used as an administrative device. The individual would of course receive notice of the amount withheld and could use this as a credit on his individual return. Also persons with total taxable income from all sources of (say) not over $2,000 might be charged a uniform rate which would be withheld as to corporate earnings, and so might be relieved of including corporate earnings (including dividends) in their individual returns. There are also numerous other administrative devices which could be used to simplify this problem.

It is true that certain complexities would arise as to the proper computation of imputed individual income derived from corporations having preferred stock in arrears, complicated capital structures, or which were in receivership. Probably the knottiest problem would be the imputation of income to stockholders where there was a holding company set-up. However, it would seem that use of consolidated earnings would largely solve this problem. A related problem is of course, the capital gains tax, with which we are not here attempting to deal. However, these problems as well as others could be met by appropriate drafting of the legislation and interpretation in the usual American fashion of case administrative decision, and appeal to the courts if that were necessary.

From the point of view of corporations, and the Bureau of Internal Revenue, the administrative detail would in certain respects be reduced. The corporations would no longer have to file returns (other than informational returns) and would not have to include estimated tax liability in their financial statements. The Bureau, in turn, would be relieved of a vast amount of work in collecting taxes from corporations and of such administrative decisions as the "proper" amount of earnings which may be retained without penalty.[3] The number of taxpayers would be reduced by some 500,000, that being about the number of business corporations in the country.

In the Final Report of the Committee of the National Tax Association, previously referred to, there was considerable difference of opinion concerning the administrative difficulties which would be encountered with the extension of the partnership method to corporations. However, the Report concludes as follows on this point: [4]

> With respect to the area within which it is practicable to apply the partnership method, all of us agree that in the case of all corporations whose capital structure is simple and whose securities are not distributed among many holders, the administrative problem is not serious. The committee is of the opinion that the number of corporations to which the partnership method can be applied without involving formidable administrative difficulties is far greater than is generally realized and includes all but a few thousand, perhaps, of our larger corporations.

[3] The present law provides for heavy penalty taxes on undistributed earnings of a corporation not reasonably required for the purposes of the business. This provision recognizes that tax avoidance can be attained by retention of earnings, but permits the avoidance if the motive is "pure." As discussed later, it fails to meet the fundamental inequities inherent in our present system, and depends on a subjective judgment of whether tax avoidance is the motive for earnings retention.

[4] *Op. Cit.*, (page 25).

> The committee realizes, of course, that technical difficulties will be encountered in the application of the partnership method to corporations and favors experimentation to determine by experience the furthermost limits of the practical application of the method.

Since 1939, when this was written, great strides have been made in proper corporate income accounting. This has been due not only to the requirements of the Securities and Exchange Commission, the Federal Power Commission, and other federal and state agencies, but also to the efforts of the professional accounting societies. In addition, over 150 electric and gas holding companies have been eliminated under the Holding Company Act of 1935, and those that continue or will continue to exist (estimated by the Securities and Exchange Commission at 20) have greatly simplified their capital structures. Of course the possibility also exists of enacting legislation which will still further reduce or entirely eliminate the difficulties which would be encountered in the "few thousand" corporations referred to in the Committee's report.

Why is the proposed change in the tax structure not only desirable but necessary in order to correct the present inequities in our system?

To achieve equity, a progressive income tax system should have the effect of taxing individuals with the same incomes at the same over-all rates, after making appropriate allowance for exemptions. As a corollary, it also should have the effect of taxing persons with larger incomes at higher over-all rates than those with lower incomes.[5] (This is effected as to personal income only by the progressive brackets in our present law of from 20 per cent to 91 per cent).

The reasoning which follows is based on the premises that the burden of corporate income taxes falls either on (a) past stockholders, (b) present stockholders, (c) consumers, or (in the usual case) (d) on all three categories in varying degrees.[6]

Finally, there is the premise that the earnings of a corporation constitute a part of the real income of its stockholders, whether distributed or not. This is clearly recognized under the present law in the taxing of individual proprietors and partnerships. But there are those who are so carried away by the corporate entity theory, that they do not recognize that corporate earnings are, from an economic point of view, income of the individuals who own the corporations' stock. But surely, the legal form of business organization should not be permitted to blind us to the realities. Thus, if in 1954 a partnership with ten partners has income of $100,000, with profits divided equally, each partner will have $10,000 of taxable income from the partnership whether or not it is distributed. If in 1955, a corporation is formed to take over the former partnership, each former partner to hold 10 per cent of the stock, and the new corporation again earns $100,000 in 1955, is there any valid reason why these individuals should not be considered for tax purposes as having the same incomes as they had during 1954 and should they not bear the same tax burden? (Nor does the size of the company or the number of stockholders affect this question).

[5] The question of whether the source of income should make a difference is not considered; e.g., whether a person receiving $10,000 annually from interest or dividends should be taxed at the same rate as a person receiving a $10,000 salary; this point is not germane to this discussion.

[6] There is the additional possibility that some part of the burden may fall on employees since labors' bargaining power is in some instances affected by a corporation's net income after taxes. This possibility will be ignored for the purposes of this discussion.

Actually, under our present system of taxation, most of the $100,000 would be taxed at 52 per cent, leaving about $48,000 of net earnings which if (and only if) distributed would be further taxed to the individual stockholders. The tax consequences to these individuals will thus be changed drastically if the change from the partnership to the corporate form of organization is made.

If the foregoing premises are accepted, it follows logically that no system of purportedly progressive income taxation which combines an income tax on the corporation (whether progressive or not) with a progressive income tax on the individual, can possibly meet the standard of equity embodied in the above definition. Furthermore, the only practical way in which the inequities inherent in the present system can be removed, is by adoption of the proposal herein outlined. Four additional illustrations will serve to demonstrate this thesis.

(A) Let us first assume a corporation engaged in a business where the entire burden of the corporate income tax falls on the stockholder investor, i.e., where if the tax were removed, corporate earnings available for stockholders would be increased by the amount of the tax; or where if the tax is increased earnings would be correspondingly reduced. Let us also assume that a Mr. (relatively) Poor and Mr. Rich have taxable incomes after exemptions of $100 and $100,000 respectively (from sources other than this corporation).

Poor and Rich each inherit $20,000 and purchase stock of this corporation on the open market. The price paid for the stock would depend on the then prospective earnings and dividends of the company after deduction of the prospective corporate income tax. Thus under our present system, the burden of the tax (in capitalized amount) would have been shifted back to previous stockholders from whom the stock was purchased, and hence Messrs. Poor and Rich would not bear any part of the tax burden so long as both the tax and the amount of earnings and dividends remained unchanged. It would seem apparent that there is here a substantial unfairness to past stockholders, who although of varying incomes, received the same price for the stock. However, this is water under the bridge, so let us examine the continuing nature of the inequities.

Let us assume that at the time the stock was purchased, earnings on the stock held by Poor and Rich before the corporate income tax were $4000 each, so that with a tax of 52 per cent, net earnings would be $1920 each. If the corporation now pursues a policy of retaining all earnings, and as a result earnings double, Poor and Rich will bear the burden of the corporate tax on the increased earnings. Here is a clear violation of our equity premise, for each is paying 52 per cent on that part of the earnings representing the increase, whereas Poor should be paying 20 per cent and Rich should be paying 83 per cent in order to put them on the same footing as other persons of like incomes. Furthermore, with respect to that part of the earnings retained which do not represent an increase, both Poor and Rich will pay a rate of zero, since the burden of the corporate tax on this part of the income stream was, as previously noted, borne by past stockholders. The corporation is in effect saving a part of the stockholders income and investing it. Other persons who save their incomes and invest are not relieved of income taxation on that part of income which they save.

(B) Assume that the corporation described in (A) pays out all of its earnings after taxes in dividends, so that Poor and Rich each receive additional income of $1920 annually. Poor will pay a tax of 20 per cent and Rich 83 per cent on these dividends, minus the dividend credit. While in this case there may be no inequity as between Poor and Rich considered alone, nevertheless there is substantial inequity as between Poor and Rich, and other persons in the same income brackets where the latter have investments in corporations which retain their earnings. A very substantial inequity may also arise here due to the dividend credit. Since under the assumptions made, neither Poor nor Rich are bearing any substantial part of the burden of the corporate income tax, why should they be paying a lower net tax than others in the same brackets not receiving such credits? There is no "double taxation" as far as these stockholders are concerned.

(C) Now let us assume that present rather than past stockholders are bearing the burden of the corporate tax. In this case, Messrs. Poor and Rich would each in effect be paying a tax of (usually) 52 per cent on income properly attributable to them, provided all earnings are retained by the corporation. Thus Poor is paying 52 per cent as compared with 20 per cent paid by others in the same bracket and Rich is also paying only 52 per cent as compared with 83 per cent paid by others in his bracket. Further, Poor and Rich are each paying 52 per cent so that there is here present a clear inequity as between them.

If the company pays out its earnings in dividends Poor's over-all rate (including the 52 per cent on the corporate income properly attributable to him) goes up to over 60 per cent which will be only slightly less than the over-all rate of about 65 per cent which will be paid by Rich.[7] We need not labor the point that our equity principles are clearly violated under this state of affairs. It should be noted that the dividend credit embodied in our present law presupposes that the entire burden of the corporate income tax falls on present investors and not on past investors or consumers. This is a false assumption, but even if it were true, dividend credits would not correct the inequities. Thus, for example a 100 per cent dividend credit would still leave a burden of 52 per cent each on Poor and Rich and so leaves us just where we were when all earnings are retained.

(D) Finally, there is the possible assumption that the burden of the corporate income tax falls on the consumer rather than the investor—clearly the case in public utility industries where the allowable return is based on income after corporate income taxes. Thus for example when corporate income taxes were increased from 47 per cent to 52 per cent, the New York Public Service Commission permitted a rate increase to the New York Telephone Company, which supposedly matched the increased taxes. Obviously no part of the increased tax fell on the investor, but was all borne by the user of telephone service. The inequities which arise under this situation are similar to those discussed under (A) and (B), but with the additional factor that consumers in these industries are paying a tax, which while purportedly an income tax, is actually a highly inequitable sales tax.

Since, under the present system, these

[7] Rich's tax will be $60,480 plus 83 per cent on the dividends which he receives from the corporation, plus 52 per cent on the $4,000 of corporate income, minus his credit on dividends received. The credit will vary depending on how much of his other income is in the form of dividends.

concealed sales taxes exist, it may well be that the revised system should, along with eliminating the corporate income tax, increase the proportion of taxes raised by direct sales taxes. In other words, since a very large proportion of federal government revenues are now raised by a concealed sales tax, it might be better to continue raising these revenues by an unconcealed sales tax rather than throwing the entire burden on the personal income tax. In this connection, it should be noted that the present concealed sales tax (i.e., the corporate income tax insofar as it is passed on to consumers) is highly inequitable because it falls on individuals only in proportion to the profitability of the corporation furnishing the product or service. Why should a person who purchases goods or services from a profitable company pay a sales tax, while one who purchases from an unprofitable one does not? Such a system would seem to encourage the unprofitable company, and remove or at least reduce the competitive advantage which should accompany greater profitability and efficiency. A direct (unconcealed) sales tax would remove this penalty on efficiency.

Let the income tax be what it purports to be, and if it is impracticable to raise the necessary revenues entirely from this source, as our present system recognizes, then let us at least have our sales taxes fairly and squarely labelled as such, and not be collected in the present inequitable and economically undesirable fashion.

A further point to note in passing is that the present personal income brackets are unrealistic and self-defeating. Few persons who have good tax advice, pay taxes on income in the upper brackets because avoidance—if not evasion—is so easy. There are tax exempt securities, stock option plans, retirement plans, retained earnings, expense accounts, foundations, contributions and many other devices available to those who might otherwise run into the brackets over 50 or 60 per cent. It would be far better to make the brackets equitable (as proposed) and feasible, and raise the balance of the necessary revenues by straight sales taxes on selected items.

It should again be noted that if Poor and Rich had invested their inheritances in proprietorship enterprises or formed a partnership, the tax consequences would be quite different.[8] Here, whether earnings were distributed or not, they would be taxed at the progressive rates attributable to these individuals. Thus again we see that individuals may be taxed at entirely different rates depending on the forms of business enterprises in which they invest, even though they may have made identical investments in businesses which have identical earnings.

The assumptions made in our four examples throw the burden of the corporate income tax on each of three possible classes of taxpayers who could conceivably bear that burden. In each case, substantial inequities arise. If it is assumed that the burden falls on two or three of these classes instead of one (which is generally the case), then of course the inequities may or may not be diminished by being spread. However, it cannot be assumed that the inequities

[8] The Internal Revenue Code of 1954 permits most unincorporated businesses to elect to be taxed as a corporation. On this point, the following pertinent observation has been made: "However, until businessmen are assured that the privilege has become a settled part of the law and have precedents as to how this novel procedure will operate, they may hesitate to use it freely." (Guthman and Dougal, "Corporate Financial Policy"; page 21; Third Edition; Prentice-Hall, Inc., 1955). This provision, while it may tend to favor non-incorporated businesses, nevertheless simply extends the difficulties inherent in the present system to those businesses.

would disappear or be substantially modified in the over-all picture through the operation of compensating factors.

Everyone knows that there are these inequities in our present tax system, but the question may properly be raised as to whether they are sufficiently serious to warrant drastic corrective action. The answer to this point lies in the magnitude of our corporate and individual income taxes. Total federal tax receipts in 1956 were budgeted at $64.5 billion of which approximately $33.5 billion (52 per cent) was derived from personal income taxes and $20.3 billion (31.5 per cent) was from corporate income taxes. If the tax structure were changed in line with our proposal, the $20.3 billion now collected from corporations would have to be raised from other sources. This would mean that some $40 billion (assuming that the taxable income of corporations is about twice the amount of tax collected) now taxed at a straight 52 per cent (or thereabouts) would henceforth all be taxed at the progressive rates then applicable to the individual stockholders. This clearly involves a gigantic shifting of taxes, running into the billions, and the magnitude of the shifting clearly measures the magnitude of the present inequities.

It should be noted that this proposal follows neither a "soak the rich" nor "soak the poor" philosophy. The questions of how the burden of our income taxes should fall as between the lower and higher income groups and the extent to which federal revenues should be collected by sales taxes are not primarily involved. That is a matter for Congress to decide in setting up the brackets and rates in each bracket which of course would have to be substantially altered. We are herein interested only in eliminating undue preferences and unjust discriminations in the over-all structure.

In summary, our over-all federal income tax structure at the present time is neither progressive nor regressive. It varies from person to person in a completely hit or miss fashion. Some persons who should be entirely exempt from taxation or are in the low income brackets pay 52 per cent and upwards on income properly attributable to them. Others who should be in the high brackets substantially avoid all income taxation. The reverse is true of other individuals in these same brackets. Parenthetically it should be noted that this situation cannot be entirely corrected unless tax exempt securities are eliminated—a point so obvious as to need no elaboration.

Finally, no proposal other than the one set forth herein can eliminate these inequities. Dividend credits, as previously noted, modify certain inequities only in situations where the burden of the corporate tax falls entirely on the present stockholders but even here such credits accentuate other inequities.[9] A progressive income tax on corporations would penalize large corporations and their stockholders without eliminating any of the present inequities. In fact it would increase those inequities and make confusion worse confounded. Again, a tax on retained earnings, not related to the incomes of the individual stockholders, would not correct the situation. The only alternative which would correct the inequities would be to

[9] In this connection, how can a dividend credit to a preferred stockholder possibly be justified? The holder of a dividend paying cumulative preferred stock cannot by any possible reasoning bear any part of the burden of the corporate tax even though the earnings out of which the corporate tax is paid include the preferred dividends. Here the tax clearly falls either on common stockholders past or present, or consumers.

(a) eliminate all corporate income taxes (which is a part of our proposal) and (b) require all corporations to pay out 100 per cent of their earnings. In my opinion this latter requirement would not be desirable. Internal financing has become such a significant part of our economic picture, that to eliminate it would cause an unnecessary restriction and burden on management. There is no more reason why corporations should be required to adopt this policy than other forms of business enterprises.

In addition to correcting inequities in the present system there are a number of other considerations which make the proposed change desirable. Indeed, these considerations may be far more important to the American economy than the correction of inequities previously discussed.

The American private enterprise system depends to a major degree on the corporate form of doing business as a means of conducting its economy. It is well known that our present tax system discourages the flow of capital into capital stock financing. The 52 per cent tax on corporate earnings encourages the use of debt rather than equity financing, since interest is deductable for tax purposes while dividends are not. This encourages top-heavy capital structures which in the event of even a mild recession may mean catastrophe to a large number of companies, their investors and their employees. In this connection, it is noteworthy that sources of corporate funds (new money exclusive of refundings) were, for the years 1952 to 1954 inclusive, $19.4 billion from retained earnings, $7.5 billion from stock issues (including preferred issues) and $16.3 billion from issuance of debt.[10]

[10] Statistical Abstract of the United States, 1956, U. S. Department of Commerce, Bureau of the Census.

Thus, corporations are raising over twice as much of their capital requirements from debt as from stock issues. While this unhealthy symptom may appear to be offset by the increase in equity investment derived from retained earnings, this too may constitute an additional symptom of the ills arising from the present tax structure.

Since the progressive tax on individuals can be avoided by non-payment of dividends, many companies will retain as much of their earnings as the Bureau of Internal Revenue will permit, particularly if the managements are influenced by their wealthier stockholders which is frequently the case.[11] This leads not only to the inequities in the tax structure previously noted, but may also be unsound from the point of view of appropriate business expansion. Tax consequences rather than sound business policy become the prime considerations in the determination of corporate action.

In addition to this incentive for the retention of earnings, which may or may not be justified from the point of view of sound expansion, the present system is notorious for encouraging wasteful corporate expenditures, because more than half of them will in effect be paid by the United States Government.

Another obvious consequence of the present high taxes on corporate income is its discouraging effect on venture capital. Since Uncle Sam takes more than half of every dollar of profit made, promoters of new corporate enterprises must see the possibility of making over 20 per cent before taxes in order actually to realize a 10 per cent return on invest-

[11] The non-payment of dividends would generally have a depressing effect on the market price of a particular stock, and so act as a further deterrent to common stock financing. This might in certain instances be offset by the demand for such a stock by persons in the upper brackets.

ment. If a 10 per cent return is necessary in order to attract equity investment in such a new enterprise, then the investment will not be made unless the return before taxes is 20 per cent or more. Thus, while there is a tax incentive for expansion of established companies from retained earnings under certain circumstances, there is just as clearly a deterrent to risk taking in many other situations (including of course in established enterprises, where the incentive for retained earnings is not dominant). As many writers have pointed out, the net effect of the present system encourages business concentration and discourages small business.[12]

Another extremely important factor involved in our proposed change is the impact it would have on prices. According to orthodox economic theory corporate income taxes do not effect prices because in a competitive industry prices will be set at the cost of production of the marginal producer who has no income taxes, and in a monopolistic industry at a point which will yield the largest profit, such point being the same whether or not an income tax is levied. That this analysis does not accord with the facts is most clearly seen in the regulated public utility industries where the policy of federal and state commissions is to permit rates which yield a fair return after income taxes. In these industries federal income taxes at present levels frequently take as much as 10 per cent to 15 per cent of every revenue dollar, which would mean that their elimination would permit rate reductions of these percentages. Outside of the public utility industries, pricing policies are frequently, if not usually, influenced by considerations other than marginal cost or maximum profit. Further, many companies have the express policy of making no investment in the production of a product unless it yields a return of 10 per cent or 15 per cent after income taxes. Hence the removal of income taxes on corporations in fields other than the public utility industries, would also have an important effect in bringing about additional investment, greater price flexibility, and increased production. Under our economic system these factors are highly important in directing the flow of capital into the proper channels.

In other words we see again that the corporate income tax is clearly a concealed sales tax when applied to public utility companies, and is either shifted to residential users of utility services or is reflected in the prices of products sold by commercial and industrial users. It is less clearly but still definitely a concealed sales tax in many other industries.[13]

In the electric utility industry the corporate income tax leads to a very special kind of inequity because of the existence of public ownership. Users of electricity in areas served by publicly owned plants—Nebraska, T. V. A., Bonneville, cities with municipally owned plants, etc., are relieved of a burden imposed elsewhere. This constitues a subtle subsidy for persons living in these areas in that their electric bills do not include the heavy tax which is included in the bills of customers served by privately owned companies. The removal of the corporate income tax would not only remove this unfair discrimination

[12] See for example, "Taxation and Business Concentration." Symposium conducted by Tax Institute, June 15-16; 1950; New York.

[13] If the corporate income tax were removed, can it be doubted that this would affect prices of products sold by such companies as General Motors, General Electric, and DuPont?

which encourages the extension of government ownership, but would also give the American people an opportunity to judge much more fairly the relative merits of private vs. public ownership.

Finally, the proposed change would remove the obfuscation which attends our present tax structure. It is impossible today to determine accurately who is bearing the tax burden. How can Congress and the American people arrive at fair decisions on this question, when they do not and cannot know the consequences of the legislative actions taken? Let there be light!

In summary, our tax system acts as sand in the gears of our economic machinery. It is very clear that a large part of this sand would be removed by the change in our system herein proposed. True, the individuals in the higher income brackets might still find that government tax exempts would give them a higher yield than investment in stocks. But it would certainly meet most of the other difficulties mentioned in the preceding paragraphs. No longer would there be a tax advantage through debt financing nor advantage to anyone from earnings retention rather than dividend distribution. The present penalty on common stock investment and encouragement of top heavy capital structures would be removed. The present advantages of the partnership or proprietorship form of doing business over the corporate form (or vice versa) would be eliminated. And the flow of capital into enterprises would be determined solely on the basis of profitability rather than as at present being strongly influenced by tax consequences. And finally, the proposed change would bring about conditions leading to reduced prices, through giving an added incentive for the institution of more efficient methods and reduced costs.

There is an old saying to the effect that a chain is no stronger than its weakest link. If the premises and logic contained herein are correct, our private enterprise system has as one of its weakest links an income tax system which combines a straight tax on the corporation with a progressive tax on the individual. To remove the weak link and put in a strong one would be accomplished by the proposal made in this article and as far as the writer can see, only by this proposal. A poll of economists and experts in the field of taxation would, it is believed, find substantial if not overwhelming agreement with this conclusion. It would certainly be interesting to see the results of such a poll.

In conclusion, it may be noted that the change from the present system to that proposed should undoubtedly be made gradually in order to minimize chaotic changes in commodity and security prices. The details of making such a change, including the time required, are matters which would require intensive study by economists and tax experts. The important thing is to get started moving in the right direction.

STATE AND LOCAL GOVERNMENTAL REVENUE STRUCTURES—A NATIONAL AND REGIONAL ANALYSIS

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THIS article summarizes recent changes in state and local revenue structures in the United States and examines the influence of such factors as personal income, degree of urbanization, population density, and numbers of local governments per capita upon regional patterns of state and local revenue structures. The discussion focuses on changes in relative importance of the revenue sources and the differential impacts of those revenues on personal incomes.

1. *Recent Trends of State and Local Revenues in the United States*

For the past quarter of a century the property tax continued its long decline as a major source of state revenue, while sales and other excise taxes, income taxes, and other sources gained in importance. At the same time, programs of state grants-in-aid and shared taxes were generally adopted. Statutory changes have been less drastic since the beginning of World War II than they were during the preceding years. Nevertheless, several states introduced new taxes and many modifications were made of the definitions of tax bases and rates. Partly because of the sharp rise in federal income tax rates and collections, about a fourth of the states have adopted neither personal nor corporation income taxes and, with few exceptions, the remaining states have been slow to develop this source of revenue. However, in the past four or five years several states have increased their tax rates and, since state income tax payments are allowable as deductions for federal income tax purposes, in effect they have shifted part of income tax payments away from the federal government. On the other hand, in the past 15 years many states have either adopted general sales taxes or have increased the rates of existing sales taxes, and nearly all states have increased excise taxes on motor fuels and cigarettes.

Several other developments are noteworthy. State grants-in-aid have been expanded, particularly for educational purposes. Many states have launched programs to improve tax administration, by reassessing taxable property, adopting income tax withholding plans, and generally tightening standards of enforcement. In a few states, notably California, Pennsylvania, Ohio, Illinois and New York, either through existing or newly granted authority, local governments have obtained significant revenues from nonproperty taxes. Most important of these are retail sales taxes and taxes on income from wages, salaries, and business. Many cities have adopted such taxes, but relatively few

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have been adopted by other types of local government. Finally, a majority of the states have recently completed or are now engaged in making comprehensive studies of their revenue structures with a view toward general tax revisions.

State revenue collections.—Compared with the shift in relative importance of the federal revenue sources since the beginning of World War II state revenue structures have been relatively stable. Nonetheless there were a few significant changes in state collections. Sales and gross receipts taxes, the chief revenue sources for states, increased to 35 per cent of total revenues in 1956 from a little more than 32 per cent in 1942 (Table I). Of the multitude of sales and other excise taxes, the general sales tax is the most important; it yielded 14 per cent of total state revenues in 1956 compared with 9 per cent in 1942. In 1942, taxes on motor fuel yielded 14 per cent of total revenue and constituted the leading source of revenue for the states. By 1956, however, the contribution of these taxes to total revenue had declined to 12 per cent. State property taxes continued their long decline by falling from 4 per cent in 1942 to 2 per cent of total state revenues in 1956. Death and gift taxes, never a major source of revenue, dropped from 1.6 per cent of total state revenues in 1942 to 1.4 per cent in 1956.

Individual income taxes rose from 4 per cent of total revenues in 1942 to 6 per cent in 1956. Rather surprisingly the corporation income tax failed to increase its share of total state revenue; in both 1942 and 1956 it yielded only 4 per cent of total revenues. Total taxes contributed somewhat more in 1956, 60 per cent of total state revenue, than in 1942 when they yielded some 57 per cent of the total. Federal aid increased from 12 per cent in 1942 to 14 per cent in 1956. In the same period, utility and liquor store revenues as a percentage of the total declined slightly, and insurance trust receipts dropped from about 20 to 13 per cent of total revenues.

Preliminary census data on state tax collections in fiscal 1957 indicate that total receipts were some 8 per cent above those of 1956. Individual income taxes increased 13 per cent over those of 1956, corporation income taxes, 11 per cent, sales and gross receipts taxes, 7 per cent, and licenses 8 per cent. Property taxes increased only 2.6 per cent; death and gift taxes rose about 9 per cent, and severance taxes were about 7 per cent more than in the preceding year.

Local revenue collections.—The most important recent change in local revenues since the turn of the century has been the declining importance of the property tax. This traditional backbone of local governmental finance yielded less than 43 per cent of total revenues in 1956 in comparison with more than 52 per cent in 1942. This development was accompanied by a moderate increase in the role of state and federal aids, grants, and shared taxes. In 1956, local revenue from the states and the federal government comprised well over a fourth of total revenues, up from 23 per cent in 1942. The rapid percentage increase in the yields of local sales and gross receipts taxes, from 1.6 per cent of the total in 1942 to 3.2 per cent in 1956, is also of interest. It may be the clue to significant developments in the future, although these taxes are still of minor

TABLE I

PERCENTAGE DISTRIBUTION OF GOVERNMENTAL REVENUE BY SOURCE, STATE AND LOCAL GOVERNMENTS, 1942 AND 1956, AND 1956 DISTRIBUTION AS A PERCENTAGE OF 1942

	State and Local Governments			State Governments			Local Governments		
	(1) 1942	(2) 1956	(3) 1956 as a Percentage of 1942 (2)/(1)	(4) 1942	(5) 1956	(6) 1956 as a Percentage of 1942 (5)/(4)	(7) 1942	(8) 1956	(9) 1956 as a Percentage of 1942 (8)/(7)
	Per Cent	*Per Cent*	*Per Cent*	*Per Cent*	*Per Cent*	*Per Cent*	*Per Cent*	*Per Cent*	*Per Cent*
Revenue from own sources:									
General revenues—									
Tax revenues	64.9	63.2	97	56.8	60.3	106	57.0	49.3	86
Individual income	2.1	3.7	176	3.6	6.2	172	.3	.6	200
Corporation income	2.1	2.1	100	3.9	4.0	103	[1]	[1]	...
Sales and gross receipts	17.9	20.8	116	32.3	35.1	109	1.6	3.4	213
General sales and gross receipts	[2]	8.6	[2]	9.2	13.7	[2]	[2]	2.1	[2]
Motor fuel	[2]	6.5	[2]	13.7	12.1	[2]	[2]	.1	[2]
Alcoholic beverages	[2]	1.4	[2]	3.7	2.5	[2]	[2]	.1	[2]
Tobacco products	[2]	1.3	[2]	1.9	2.3	[2]	[2]	.2	[2]
Other selective sales and gross receipts	[2]	3.1	[2]	3.8	4.6	[2]	[2]	1.0	[2]
Property	34.5	28.2	82	3.8	2.1	55	52.7	42.8	81
Death and gift	8.3	.8	102	1.6	1.4	88	[2]	[1]	...
Severance		.9		.9	1.6	178	...	...	...
Licenses, permits, and other taxes		6.8		10.6	9.8	92	2.3	2.5	109
Charges and miscellaneous	7.8	11.9	153	5.4	7.7	143	8.1	12.3	152
Total general revenues	72.7	75.2	103	62.2	68.0	109	65.1	61.6	95
Other revenues from own sources—									
Utility and liquor store revenue	9.7	9.2	95	5.4	4.6	85	11.1	10.8	97
Insurance trust revenue	11.1	7.6	68	19.9	12.6	63	1.1	1.4	127
Total revenues from own sources	93.5	92.0	98	87.5	85.2	97	77.4	73.8	95
Intergovernmental revenues:									
From Federal government	6.5	8.0	123	11.7	13.6	116	.6	1.2	200
From State governments	[4]	[4]	...	...	...	...	21.9	25.0	114
From local governments	[4]	[4]	...	.8	1.2	150	[4]	[4]	...
Total intergovernmental revenues	6.5[4]	8.0	123	12.5	14.8	118	22.6	26.2	116
Total revenue from all sources	100.0[4]	100.0	100	100.0	100.0	100	100.0	100.0	100

NOTE: Because of rounding, detail may not add to total.

[1] Less than 0.05 per cent. [2] Not available. [3] Amount not estimated in 1942 by the Bureau of the Census, but negligible. [4] To avoid double counting, all transactions between governments have been excluded. [5] Amount included in individual income tax collections.

Bureau of the Census, U. S. Department of Commerce.

significance in most areas.

Special districts, which in 1942 drew more than 60 per cent of their total general and intergovernmental revenues from the property tax, in 1956 derived only 29 per cent from this source. In the latter year, charges and miscellaneous revenues, which come largely from rents from housing and community redevelopment and special charges of sanitation districts, accounted for more than 57 per cent of their total general revenues.

The revenue trends of cities since World War II are also of interest. Property taxes as a component of total municipal general and intergovernmental revenues declined from more than 64 per cent in 1942 to 47 per cent in 1956. During the same period, municipal nonproperty taxes rose from 9 per cent of general revenues to 17 per cent of the total. Charges and miscellaneous revenues, which were approximately 10 per cent of general and intergovernmental revenues in 1942, increased to 17 per cent of the total in 1956.

School districts also reduced their reliance on property taxes, as revenues from intergovernmental aids, other local taxes, and charges and miscellaneous sources all increased more rapidly. The revenue structures of counties and townships were more stable, although property taxes also became less important.

2. *A Regional Analysis of State and Local Revenue Structures*

Students of American public finance have long been aware of the great diversity of state and local revenue patterns, involving the disadvantage of barriers to interstate commerce that are partly offset by the advantages of "laboratory experiments" for testing differing tax concepts. A survey of state and local revenue data indicates that such underlying factors as income levels, degree of urbanization, and numbers of local governments per capita have had some influence in shaping the broad outlines of state and local tax structures.

In order to delineate the correlation or lack of correlation of revenue structures and tax impacts with income, certain population characteristics, and numbers of local governments per capita, six series indicating revenue patterns and revenue impacts and four series indicating certain income, population, and governmental characteristics were ranked by states for 1942, or the nearest year for which data were available, and for 1953, or the nearest year possible.[1] The state rankings were then averaged for the ten regions; both state and regional rankings are summarized in Table II.

The six measures of revenue structure and impact are: (1) Total state and local revenues as a percentage of personal income, hereafter referred to as the "revenue impact"—ignoring state gains or losses from federal grants and aids; (2) total state and local taxes as a percentage of personal income, called "tax impact;" (3) total state and local taxes per capita or "per capita taxes;" (4) property taxes as a percentage of state and local revenue, called "reliance on property taxes;" (5) sales and gross receipts taxes as a percentage of state and local revenue, called "reliance on sales

[1] 1953 is the latest year for which census estimates of total local revenue collections are available in detail. The previous comparable census was in 1942.

taxes; " and (6) state personal and corporation income taxes as a percentage of state revenue, called " reliance on income taxes."

The factors listed here are tested on the hypothesis that they basically affect regional patterns of state and local revenue structures and impact: (1) Personal income (in 1942 and individual income of residents in 1953) hereafter referred to as " income level; " (2) rural population as a percentage of total population or " rural percentage of population "—the converse of the degree of urbanization; (3) total population per square mile, or " population density " and (4) number of local governments per capita or simply, " governments per person." In summary, the revenue impact, the tax impact, per capita taxes, reliance on property taxes, reliance on sales taxes, and reliance on income taxes are studied for possible correlation with income level, degree of urbanization, population density, and local governments per capita.

To aid in the analysis of the interrelationships of the ten factors, Spearman's rank correlation coefficients were calculated for the regional rankings of Table II. The results are summarized in Table III.[2] The correlations between the four general factors and the six indicators of state and local revenue impact and revenue structure are summarized in the rectangular block of 48 coefficients in the upper right-hand corner of Table III. The intercorrelation among the four general factors are summarized in the triangle of 12 coefficients in the lower right-hand corner of the table. Similarly the intercorrelations of the six indicators of revenue impact and revenue structure are indicated by the triangle of 30 coefficients in the upper left-hand corner of the table.

Analysis of Tables II and III points to several conclusions. There were a number of significant correlations among the ten factors. These correlations, however, were not completely stable—mainly because of differential changes in personal income in the various regions since 1942. The most important change between 1942 and 1953 was the decline of revenue and tax impacts in the Northeast, Lake, and Corn Belt states and conversely the increase in parts in the Southeast and Delta states. The regional rankings of per capita taxes declined between 1942 and 1953 in the Northeast, Corn Belt, and Appalachian States and increased in the Lake, Delta, Northern Plains, and Mountain States. This shifting also appeared to be largely an ultimate result of the changes in regional income levels that occurred during this period. Although there were few major changes in state or regional income level *rankings*, the interregional income level dispersion that existed in 1942 had been considerably reduced by 1953. Most strikingly, while income levels in the Southern states still generally lagged behind those of the other regions in 1953, the gap had narrowed considerably. Thus, with few exceptions, even though per capita taxes remained relatively low in the South in 1953, they had increased more

[2] Spearman's rank correlation coefficient, ρ equals $1 - \frac{6\Sigma D^2}{N(N^2-1)}$, in which D refers to the difference in rank between paired items in two series and N is the number of pairs of items. In general a positive coefficient of approximately .50 or above indicates a substantial direct correlation—though not necessarily a direct cause and effect relationship. A coefficient of −.50 to −1.00 indicates an inverse correlation. Coefficients between .50 and −.50 usually indicate that there is little or no correlation between two series. Although they are not as precise as coefficients of correlation based upon original data, the easily calculated Spearman's rank correlation coefficients suffice for overall regional comparisons.

TABLE II

COMPARISON OF STATE AND LOCAL REVENUE STRUCTURES WITH INCOME, POPULATION CHARACTERISTICS, AND NUMBER OF GOVERNMENTS, RANKINGS BY STATES AND REGIONS, 1940–1942 AND 1950–1953

State and Region	Total State and Local Revenue as a Percentage of Personal Income		Total State and Local Taxes as a Percentage of Personal Income		Per Capita State and Local Taxes		Property Taxes as a Percentage of State and Local Revenue		Sales and Gross Receipts Taxes as a Percentage of State and Local Revenue		State Personal and Corporation Income Taxes as a Percentage of State Revenue [1]		Per Capita Personal Income		Rural Population as a Percentage of Total Population		Population per Square Mile		Number of Local Governments per Capita	
	1942	1953	1942	1953	1942	1953	1942	1953	1942	1953	1942	1953	1942	1953	1940	1950	1940	1950	1942	1952
	State and regional rankings (rankings of the 10 regions in parenthesis) [2]																			
Maine	26	26	16	15	21	27	4	9	33	18	36	36	24	32	22	21	33	34	27	20
New Hampshire	10	19	3	6	10	9	3	4	37	41	35	33	26	22	37	28	22	23	20	17
Vermont	20	22	6	7	26	22	17	15	28	35	18	5	33	31	12	7	28	29	21	15
Massachusetts	16	31	12	18	6	4	8	3	47	46	9	4	11	14	47	46	3	3	47	46
Rhode Island	43	38	27	32	7	35	12	16	40	16	36	17	9	15	48	45	1	1	48	47
Connecticut	45	45	38	44	5	17	7	6	34	25	10	15	2	2	42	43	4	4	40	40
New York	6	32	2	23	1	3	10	14	46	32	1	1	7	4	46	47	5	5	28	30
New Jersey	21	43	8	39	2	16	1	1	48	40	36	36	6	5	45	48	2	2	35	36
Pennsylvania	31	46	18	45	16	34	20	25	39	36	19	10	16	13	40	40	6	7	32	25
Delaware	48	48	47	48	25	36	47	42	31	38	12	29	4	1	30	32	10	9	38	33
Maryland	46	42	46	40	27	31	15	23	36	23	13	8	10	11	38	38	7	6	45	44
Northeast	(6)	(9)	(3)	(8)	(2)	(5)	(2)	(3)	(10)	(8)	(5)	(4)	(2)	(2)	(10)	(10)	(1)	(1)	(9)	(7)
Ohio	30	47	34	47	19	33	32	17	9	15	36	36	14	8	41	39	8	8	30	26
Indiana	33	40	35	35	29	26	28	12	14	8	36	36	17	12	35	30	11	12	25	21
Illinois	35	44	19	42	9	23	14	7	10	17	36	36	13	6	44	42	9	10	15	19
Iowa	18	13	11	4	22	13	11	8	24	33	21	23	27	26	25	17	26	27	8	7
Missouri	42	41	39	46	34	38	22	29	22	21	28	24	29	20	29	31	21	25	9	10
Corn Belt	(8)	(10)	(6)	(9)	(5)	(6)	(4)	(4)	(4)	(4)	(9)	(8)	(4)	(3)	(9)	(8)	(3)	(3)	(4)	(4)
Michigan	25	36	25	33	11	12	27	22	19	13	36	36	12	9	39	41	12	11	17	18
Wisconsin	4	27	9	16	14	6	19	5	45	48	2	2	23	17	33	29	19	20	10	8
Minnesota	2	10	4	5	15	10	16	13	42	45	7	9	30	24	28	24	31	30	6	5
Lake States	(1)	(7)	(1)	(3)	(3)	(2)	(3)	(2)	(9)	(10)	(1)	(1)	(5)	(4)	(7)	(7)	(4)	(4)	(2)	(2)

TABLE II (*Continued*)

State and Region	Total State and Local Revenue as a Percentage of Personal Income		Total State and Local Taxes as a Percentage of Personal Income		Per Capita State and Local Taxes		Property Taxes as a Percentage of State and Local Revenue		Sales and Gross Receipts Taxes as a Percentage of State and Local Revenue		State Personal and Corporation Income Taxes as a Percentage of State Revenue [1]		Per Capita Personal Income		Rural Population as a Percentage of Total Population		Population per Square Mile		Number of Local Governments per Capita	
	1942	1953	1942	1953	1942	1953	1942	1953	1942	1953	1942	1953	1942	1953	1940	1950	1940	1950	1942	1952
	State and regional rankings (rankings of the 10 regions in parenthesis) [2]																			
Virginia	47	39	48	41	40	42	38	35	20	31	14	6	31	35	16	16	17	14	44	48
West Virginia	14	35	13	36	37	44	45	43	1	1	34	36	39	39	7	6	13	13	42	41
North Carolina	36	28	22	24	41	41	41	38	4	14	4	7	41	44	6	5	14	15	43	43
Kentucky	37	37	29	43	44	46	26	33	15	29	16	12	45	43	8	9	15	17	36	35
Tennessee	28	33	33	34	43	43	33	37	17	6	27	27	43	41	15	13	16	16	46	45
Appalachian	(10)	(8)	(8)	(10)	(9)	(10)	(8)	(8)	(3)	(3)	(4)	(3)	(8)	(8)	(2)	(1)	(2)	(2)	(10)	(10)
South Carolina	27	15	32	17	42	39	39	44	5	3	5	14	44	45	4	8	18	18	23	38
Georgia	44	25	43	29	46	40	40	40	11	5	6	19	42	42	13	14	23	24	34	34
Florida	23	14	26	9	28	18	31	34	16	4	36	36	32	33	34	37	30	26	37	37
Alabama	34	30	44	37	48	48	48	46	12	7	29	28	46	46	9	12	20	21	41	39
Southeast	(9)	(5)	(10)	(6)	(8)	(8)	(10)	(9)	(2)	(1)	(3)	(6)	(9)	(9)	(4)	(4)	(5)	(5)	(8)	(9)
Mississippi	15	7	20	8	45	45	36	36	7	9	17	22	48	48	1	2	25	28	26	32
Arkansas	39	17	41	28	47	47	44	45	2	11	30	25	47	47	3	3	29	31	16	23
Louisiana	9	2	7	2	33	24	37	47	18	12	24	32	40	40	23	25	24	22	39	42
Delta States	(4)	(1)	(4)	(2)	(10)	(9)	(9)	(10)	(1)	(2)	(6)	(7)	(10)	(10)	(1)	(2)	(6)	(6)	(7)	(8)
Oklahoma	13	6	15	11	38	29	43	41	8	19	20	30	38	37	18	20	32	33	11	14
Texas	41	34	42	38	39	37	21	24	27	39	36	36	35	28	26	34	35	35	19	27
Southern Plains	(5)	(4)	(7)	(7)	(7)	(7)	(6)	(7)	(5)	(6)	(8)	(10)	(7)	(7)	(6)	(6)	(8)	(8)	(3)	(5)

TABLE II (*Continued*)

State and Region	Total State and Local Revenue as a Percentage of Personal Income		Total State and Local Taxes as a Percentage of Personal Income		Per Capita State and Local Taxes		Property Taxes as a Percentage of State and Local Revenue		Sales and Gross Receipts Taxes as a Percentage of State and Local Revenue		State Personal and Corporation Income Taxes as a Percentage of State Revenue [1]		Per Capita Personal Income		Rural Population as a Percentage of Total Population		Population per Square Mile		Number of Local Governments per Capita	
	1942	1953	1942	1953	1942	1953	1942	1953	1942	1953	1942	1953	1942	1953	1940	1950	1940	1950	1942	1952
	State and regional rankings (rankings of the 10 regions in parenthesis) [2]																			
North Dakota	1	1	1	1	23	15	2	28	30	34	31	31	36	38	2	1	40	40	2	2
South Dakota	11	5	10	3	30	21	6	11	23	30	33	35	34	34	5	4	41	41	1	1
Nebraska	32	29	36	27	35	32	5	2	35	42	36	36	28	25	20	15	37	37	3	3
Kansas	24	20	28	14	31	14	13	10	29	24	26	26	25	23	24	22	36	36	4	4
Northern Plains	(3)	(3)	(2)	(1)	(6)	(4)	(1)	(1)	(8)	(9)	(10)	(9)	(6)	(6)	(3)	(3)	(9)	(9)	(1)	(1)
Montana	5	18	5	30	13	20	9	18	43	43	15	20	20	18	19	11	46	46	5	6
Idaho	17	8	31	10	32	25	18	19	38	44	11	11	18	30	11	10	43	43	7	11
Wyoming	8	3	30	12	24	8	34	31	25	28	36	36	15	21	17	18	47	47	13	9
Colorado	3	9	17	13	17	7	29	21	32	27	22	16	21	19	31	33	39	39	14	12
New Mexico	7	4	14	21	36	30	42	48	6	10	32	34	37	36	10	19	44	45	33	29
Arizona	12	12	24	19	20	19	35	30	13	20	25	21	19	29	14	26	45	44	24	28
Utah	19	16	21	25	18	28	23	27	26	26	23	18	22	27	36	36	42	42	31	24
Nevada	40	1	45	31	4	1	24	32	44	37	36	36	1	3	21	27	48	48	18	13
Mountain	(2)	(2)	(5)	(4)	(4)	(3)	(5)	(5)	(7)	(7)	(7)	(5)	(3)	(5)	(5)	(5)	(10)	(10)	(5)	(3)
Washington	29	23	40	26	8	5	46	39	3	2	36	36	5	10	32	35	34	32	22	22
Oregon	38	21	37	22	12	11	25	26	41	47	3	3	8	16	27	23	38	38	12	16
California	22	24	23	20	3	2	30	20	21	22	8	13	3	7	43	44	27	19	29	31
Pacific	(7)	(6)	(9)	(5)	(1)	(1)	(7)	(6)	(6)	(5)	(2)	(2)	(1)	(1)	(8)	(9)	(7)	(7)	(6)	(6)

[1] Each series is ranked in descending order, that is, high is 1, and so on.

[2] The 13 States that collected no personal or corporation income taxes are all given the tie ranking, 36.

U. S. Department of Commerce. Data on personal income are based on the Office of Business Economics' series, "personal income" for 1942 and "individual income of residents" for 1953. State rankings based on the two series vary; however, regional rankings are nearly identical.

rapidly during the previous decade than in the Northern or Western states. As a result, revenue and tax impacts increased more rapidly in the South than elsewhere in the country.

In both 1942 and 1953 the Pacific states had the heaviest per capita taxes. In the Lake states the regional ranking of per capita taxes increased from third to second, but income levels rose considerably more rapidly than taxes, and thus the regional rankings of revenue and tax impacts dropped sharply.

Also, in both 1942 and 1953 there was a direct correlation between income levels and per capita taxes, although by the latter year the correlation had weakened. The coefficient declined from .95 in 1942 to .52 in 1953. Conversely there was a strong inverse correlation between per capita taxes and the rural percentage of the population in both 1940-42 and 1950-53. That is, in general, the highly urbanized regions, which were for the most part those of the higher income levels, had the highest per capita taxes. By 1953, however, there was an inverse relationship (Spearman's coefficient of −.55) between regional income levels and revenue impacts.

Population density and governments per person, which, not surprisingly, were inversely related, appeared to have definite effects on revenue and tax impacts. In general, regions with low population density and a large number of governments per person had high revenue and tax impacts. Other things being equal, it would appear that after a certain maximum ratio, the greater the number of local governments per person the less economical the government service.

Regional shifts in the relative importance of property taxes, sales and gross receipts taxes, and income taxes between 1942 and 1953 were less pronounced than changes in revenue and tax impacts and per capita taxes in the same period. Nevertheless in several regions there were important shifts in the components of the revenue structures. In both 1942 and 1953 the Southern states relied extensively on sales and gross receipts taxes but, partly because of homestead exemptions and tax concessions to encourage the entry of new industries, they obtained a very low proportion of total state and local revenues from property taxation. The Northeast, Lake, and Northern Plains states relied heavily on the property tax and less on sales and gross receipts taxes. The Lake, Pacific, and Appalachian states used the state income tax more intensively than other regions. The income tax was least important in the Northern and Southern Plains and the Corn Belt regions.

In both 1942 and 1953 there was a fairly definite direct relationship between regional income levels and the reliance on property taxes. Conversely, there was an inverse relationship between income levels and reliance on sales taxes. As might be expected there was a strong inverse correlation between reliance on property taxes and reliance on sales taxes in both years. Reliance on income taxes had a weak direct correlation with population density and a slightly stronger correlation with per capita taxes. Evidently the factors primarily responsible for the use of this source have been other than economic.[3] A number of other correlations, of more or less significance, can be seen

[3] Of course it is impossible to isolate completely so-called economic factors from sociological political and other elements which have been altering deeply rooted fiscal traditions.

TABLE III

SPEARMAN'S RANK CORRELATION COEFFICIENTS OF REGIONAL INDICATORS OF STATE AND LOCAL REVENUE IMPACT AND REVENUE STRUCTURE, AND INCOME, POPULATION, AND NUMBER OF GOVERNMENTS

		Tax Impact	Per Capita Taxes	Reliance on Property Taxes	Reliance on Sales Taxes	Reliance on Income Taxes	Income Level	Rural Percentage of Population	Population Density	Governments per Person
		1942 1953	1942 1953	1942 1953	1942 1953	1942 1953	1942 1953	1940 1950	1940 1950	1942 1952
		Spearman's (regional) rank correlation coefficients								
Revenue impact	1942	.78*	.27	.52*	-.54*	-.13	.16	.02	-.53*	.67*
	1953	.74*	-.38	-.31	.07	-.36	-.55*	.53*	-.82*	.15
Tax impact	1942		.22	.76*	-.62*	.08	.14	-.08	-.01	.49
	1953		.12	.21	-.34	-.08	-.16	.22	-.65*	.53*
Per capita taxes	1942			.58*	-.79*	.26	.95*	-.83*	.02	.22
	1953			.66*	-.64*	.48	.52*	-.87*	.02	.47
Reliance on property taxes	1942				-.87*	-.37	.56*	-.59*	-.01	.56*
	1953				-.89*	.09	.66*	-.47	-.02	.81*
Reliance on sales taxes	1942					-.03	-.72*	.59*	.02	-.38
	1953					-.16	-.55*	.40	.18	-.79*
Reliance on income taxes	1942						.08	-.12	.37	-.39
	1953						.39	-.25	.39	-.18
Income level	1942							-.81*	-.01	.14
	1953							-.88*	.15	.42
Rural percentage of population	1940								-.32	-.12
	1950								-.22	-.27
Population density	1940									-.56*
	1950									-.50*

NOTE: See text for definition of Spearman's rank correlation coefficient and discussion of the ten series which are being compared. The upper coefficient of each comparison refers to the earlier years; the lower coefficient refers to the later years. For example, the figure in the upper right hand corner of the tabulation, .67, is Spearman's rank correlation coefficient of governments per person in 1942 and the revenue load in 1942. The figure immediately below, .15, is the correlation coefficient of governments per person in 1952 and the revenue load in 1953.

* A coefficient of .50 to 1.00 or -.50 to -1.00 suggests the existence of a definite underlying relationship.

by a careful examination of Tables II and III.

Conclusion

The decline in the role of the property tax which began in the 19th century has continued to the present, although this source is still a major source of revenue for local governments. Sales and gross receipts taxes, almost unknown at the turn of the century, now dominate state revenue structures and continue to grow in importance. Individual and corporation income taxes, with a few exceptions play minor roles in the revenue structures of most states. Evidently the extensive federal reliance on this has been a factor in limiting state expansion of its use.

A regional analysis of state and local revenues indicates that revenue and tax impacts on personal incomes, per capita taxes, and reliance on particular sources of revenue, often reflect basic regional differences in income, degree of urbanization, population density, and number of local governments per capita. The overall picture however is complex and many economic, political and other factors have been working at cross purposes.

INCOME TAXATION AND JOB SELECTION

ROBERT H. WESSEL *

IN RECENT years considerable attention has been directed toward the influence which income taxation may have upon the supply of labor. Many writers have pointed out that the net money income derived from supplying labor is reduced by income taxes while leisure, the alternative to work, goes tax free. Consequently the option of enjoying more or less leisure is viewed as an inducement which may lead individuals to vary the quantity of labor they supply. Some writers carry through their analyses by comparing the marginal utility of extra income after taxes with the marginal utility of the leisure which must be foregone in earning this income plus the marginal disutility of the additional work.[1] Others employ the individual's preference map between income and leisure to accomplish the same objective.[2] The conclusions concerning the influence upon the supply of labor usually depend upon the assumptions made regarding the shapes of the utility functions or indifference curves.

Although this aspect of the problem is undoubtedly important, it by no means exhausts the possible ways in which income taxation may exert an influence upon the labor supply. Of great significance also is its effect upon the choice of occupation. Here too the tax may act in a discriminatory manner.

How the Tax Discriminates

This possibility arises not only because the particular tax statute and its enforcement may lack neutrality in the manner in which it affects different sources of income, but also because almost any income tax which can be devised must levy only upon money income plus commodities and services received in kind. However, all jobs in addition to monetary reward possess nonpecuniary features such as safety, security, prestige, and pleasant working conditions (or their opposites), and therefore an income tax necessarily discriminates against the monetary components by reducing their net amount and in favor of the nonpecuniary components by leaving them unchanged.[3]

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[1] See for example, George F. Break, "Income Taxes, Wage Rates, and the Incentive to Supply Labor Services," *National Tax Journal*, December 1953.

[2] This technique was first used extensively for this type of analysis by Duncan Black in his *Incidence of Income Taxes*, London, 1939. Many others have adopted it since.

[3] Richard Goode points out that income taxes may affect the relative attractiveness of different types of employment because of differences in (1) the adequacy of deductions allowed for necessary costs of earning income, (2) the extent to which returns from various types of work enter into the tax base, (3) the tax rates applicable to money incomes expected to be equivalent over time, and (4) the effectiveness of tax enforcement. Goode's second point covers the discrimination between monetary and nonmonetary elements of the occupation. "The Income Tax and the Supply of Labor," *Journal of Political Economy*, October, 1949, p. 432.

Although there is a temptation at first glance to conclude that this would encourage workers to elect jobs which offer favorable nonmonetary factors that are not included in the tax base, such a result would not invariably follow. Even though the income tax, in effect, reduces the cost of enjoying the favorable nonmonetary factors which many less highly paid occupations offer (by decreasing the amount of after tax income in the more highly paid but less pleasant job which is foregone when a more pleasant job is selected), it simultaneously reduces money income thereby increasing the marginal utilities of the things purchased with money. This would create an opposing tendency toward greater emphasis upon earning money income and consequently the selection of the more lucrative but less enjoyable occupation. Hence it is apparent with respect to job selection that the tax engenders reactions similar to both the substitution and income effects which are encountered in the determination of the amount of labor which will be supplied in a given employment.[4] The choice of job may therefore depend upon which influence dominates. Should the tax produce sufficiently strong income effects, the individual will be motivated to select less desirable but more highly paid types of work, because the utility of additional money income, after tax, will exceed the extra disutility of the more onerous employment. If, on the other hand, the substitution effect is paramount, the additional disutility of less desirable employment will exceed the extra utility of after-tax money income, and the individual will be motivated to seek more pleasant types of work.[5]

Analysis of Job Selection

The influence of income taxation upon job selection can be demonstrated graphically. In Figure 1, income in occupation *A* is measured along the horizontal axis, while income in occupation *B* is measured vertically. It is assumed that our individual is capable of performing both jobs, but must choose one or the other and work exclusively in that calling.[6] If he had no reason to prefer either occupation, the nonmonetary advantages of both jobs being equal, the choice would be a matter of indifference as long as the pay was the same in both callings. Consequently the locus of the points indicating salaries in occupations *A* and *B* which would yield equivalent total satisfaction would be a straight 45 degree line. Under these conditions the individual would choose the occupation paying the higher salary. This is indicated in Figure 1 by the point representing the actual salaries lying above or below the 45 degree line of equal satisfaction.[7] Higher pay in *B* would

[4] Many writers have pointed out these income and substitution effects with respect to the quantity of labor which will be offered. Black and Break are examples.

[5] This assumes that typically more desirable nonmonetary features and lower salaries go hand in hand. This usually but not always is the case.

[6] The latter is necessary since the usual indifference presentation, where the curves represent equivalent combinations, would have much less realistic significance. In other words, ordinarily a person must choose one type of work rather than being free to combine different occupations in varying proportions. Further, although the amount of labor supplied in each occupation may be subject to variation, each point on the diagram assumes that within each occupation the optimum possible adjustment of leisure and work has been achieved.

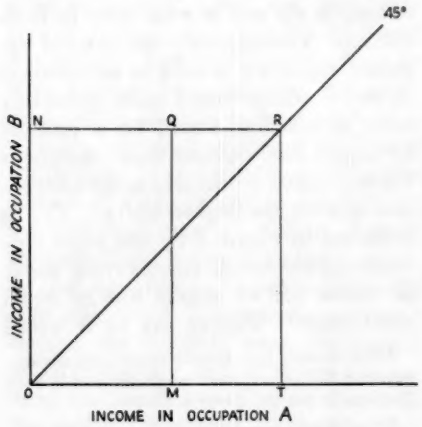
[7] Although one might be tempted to call the line of equal satisfaction an indifference curve, this terminology is avoided to eliminate the possibility of confusion. All points on the usual indifference curve indicate different combinations which yield equal satisfaction. The points on this curve on the other hand do not show equal combinations but rather

(Con't. next page)

cause the point to lie above the line while higher pay in *A* would cause it to fall below. With this type of graph the choice of job is indicated by the position of this point. If it is above the equal satisfaction line *B* will be chosen, if below *A* will be selected. Thus in Figure 1 if *O M* can be earned in occupation *A*, and *O N* in occupation *B*, the point *Q*, which depicts these two income possibilities, lies above the equal satisfaction line. Since income of *O M* in occupation *A* falls short of *O T* which

FIGURE 1

GRAPHIC ANALYSIS OF JOB SELECTION



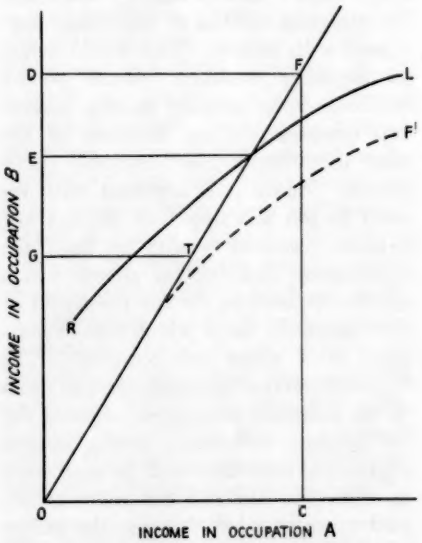
would be necessary to equalize *O N* in occupation *B*, the latter occupation will be selected.

Should one occupation be deemed superior, because of more favorable nonmonetary elements, then the line of equal satisfaction would vary from the 45 degree line. *R L* in Figure 2 is a line of equal satisfaction which depicts a preference for occupation *A*, so that it takes a larger income in *B* to constitute the equivalent of a given income in *A*. For the individual to choose B, the point representing the actual incomes in *A* and *B* would have to lie above *R L*. If the point fell below *R L* he would choose *A*.

A few words are in order at this point concerning the shapes that *R L*, the equal satisfaction line, may take. We have already seen that if the individual has no reason to prefer one job over another it will be a straight 45 degree

FIGURE 2

GRAPHIC ANALYSIS OF JOB SELECTION



line while a preference for one of the positions will cause *R L* to lie either above or below the 45 degree line. *R L* might be a straight line which would mean that additions to the salary in both occupations would be evaluated at constant ratio. On the other hand the relative importance of the nonmonetary features of the occupations may vary considerably at different pay levels.

equal alternatives. In addition total satisfaction is not the same at all points but should mount as the curve rises to the right.

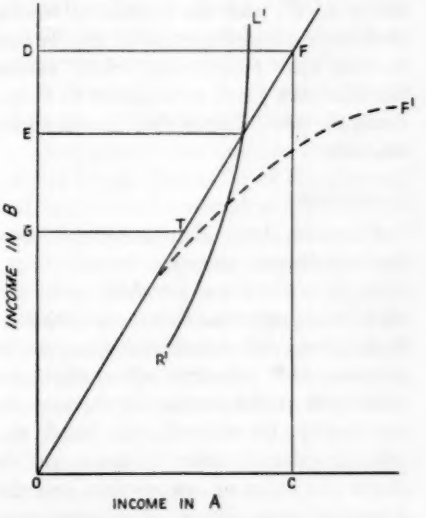
Ample leisure, for example, might not be very important to an individual if his pay were so low that he could not afford the expenditures on travel, entertainment, etc. necessary to enable him to enjoy his spare time. However should his income rise sufficiently to permit these outlays, his estimate of the value of leisure might be greatly enhanced. A reaction of this sort might even be sufficient to cause *R L* to cross the 45 degree line at some point. In other cases money income might lose most of its significance in one of the occupations once a certain level of income had been achieved. This would cause the upper reaches of *R L* to become almost parallel to one of the axes. *R L* need not and probably does not start at zero on either axis. This can be explained both in terms of the necessity for a certain minimum subsistence or the availability of other means of support.

Tax Induced Job Shifts

The influence of an income tax upon job selection can be illustrated as follows: In Figure 2 if the rates of pay are such that *O C* can be earned in *A* and *O D* in *B*, the point *F* lies above *R L* and occupation *B* would be elected. Should a proportional income tax be levied, the after tax position would be depicted by a point on a straight line connecting *F* with the origin. This is necessarily the case because for all points along this line the relative amounts (ratios) of the salaries are the same. Since a proportional tax reduces the incomes in both occupations by the same percentage the relationship remains unchanged, and consequently the after tax point falls on this line. The exact position of this point would, of course, depend upon the rate of the tax. It can be seen that if the tax rate was less than *D E* divided by *O D*, then the income after tax point would still lie above *R L* and no change of occupation would occur. Were the percentage greater, say *D G* divided by *O D*, then *T*, the after tax income point, would lie below *R L* and the worker change from occupation *B* to *A*.

FIGURE 3

GRAPHIC ANALYSIS OF JOB SELECTION



If the tax were progressive rather than proportional, then the income after-tax point would be found on the dotted line *O F'* which would lie below *O F* because the larger income would be taxed at a higher rate. It is obvious that likelihood of the shift from occupation *B* to occupation *A* is enhanced by the progressive feature.

The foregoing discussion deals with a tax-induced shift to an occupation more heavily endowed with nonmonetary advantages. This is, of course, the case of substitution effect dominance. The other case, income effect superiority,

which would cause a shift to a less desirable occupation, can also be demonstrated graphically. In this instance the line of equal satisfaction, indicated in Figure 3 by R' L', would lie below O F prior to its point of intersection with O F. If we again assume incomes of O C in occupation A and O D in B, then, in the absence of income taxation A would be chosen. As a result of the tax the after-tax income point T, lies above R' L', and the individual would elect occupation B instead of A. It can be seen that progression, which causes the after-tax point to lie below O F, reduces the possibility of this income effect reaction.

Conclusions

From the above discussion the following conclusions emerge:

1. In order for a job shift to be induced by proportional income taxation, R L (the equal satisfaction line) must intersect O F (the line whose slope depicts ratio of the incomes in the two occupations). In addition, the point depicting salaries before taxes must lie above the point of intersection, and the point depicting salaries after taxes must lie below.

2. For a proportional tax to induce a shift from a less pleasant occupation to a less remunerative one that is more highly endowed with nonmonetary features, the positive slope of O F must be greater than that of R L.[9] This would indicate that the desirability of nonmonetary elements declines less rapidly than income possibilities after the tax is imposed. A further implication of this same pattern is that at higher income levels nonmonetary factors decline in relative significance.

3. For a proportional tax to induce a shift from a more pleasant to a less pleasant occupation the slope of R L must be greater than that of O F. In this case the desirability of nonmonetary factors declines more rapidly than income capabilities after the tax is imposed.

4. Progressive tax rates reduce the possibility of movement into the less pleasant occupation and enhance the chances of a shift into the line of work in which nonmonetary advantages are greater.

The above analysis assumes that the individual is free to alter his employment. In any real situation many forces may deter him from so doing. Long established seniority, group or community ties, and sheer inertia, among others, may be cited. However, the applicability of our reasoning need not be confined to those already in the work force. Young people who are planning their careers or those unemployed and seeking new positions can be envisioned as reacting in the manner this line of reasoning suggests. For them the restrictions on free choice are not nearly so binding as for established workers.

Not only will income taxation influence the type of work selected, it may also be of importance in forming the decision on whether to work or not. This decision is possible for two reasons.[10] In the first place, if the conception of the policy forming unit is expanded to include the entire family, it is clear that the number of members of the family seeking outside employment is subject to variation. Second, if the individual has sources of income other than wages, he can rely upon them for

[9] R L must also lie above the 45 degree line. If this were not the case the preference for A over B would not exist.

[10] Break points out the related possibility that retirement age may be influenced; *op. cit.*, p. 343.

support should employment be considered ill-advised. For example, income from invested savings may be sufficient to maintain a reasonable standard of living. Unemployment compensation or pensions might also make this provision.

Should the tax bear heavily upon the family standard of living, more members of the family may seek employment. Thus the supply of labor would be increased. In addition, those living on other sources of income may find that their customary way of life is jeopardized by the tax induced reduction of income. Therefore, they too may seek employment rather than relying upon investment income alone. In this manner tax induced income effects stem from these two sources. That both of these situations may exist is apparent from current observation. On the other hand if the standard of living of the family is not seriously involved, the result of income taxation may be such as to make outside employment of the wife inadvisable. This is especially true since the wife, as a housekeeper, may earn real income which is not subject to income taxation.[11] Further, sources of income other than wages may be sufficient after taxes to sustain the individual's livelihood. Therefore, he may elect not to work rather than pay more income taxes. For example, individuals eligible for unemployment compensation have been known to weigh income after tax against the tax relief checks in deciding whether to take a job. If the gross salary should be $35.00 per week and the relief payment $20.00, such an individual would figure that he would be working for $15.00 per week. Should the income tax be 20 per cent, then the net wage would be reduced to $28.00 and the net advantage derived from working would be only $8.00. This could easily convince him to go on relief rather than working. Both of these substitution elements are reinforced by progression which would tax the increment derived from work more heavily than the other source of income.

These possibilities could be further explored by an adaptation of the theoretical apparatus employed to consider the issue of job choice. Conclusions will again depend upon the shapes which the curves are assumed to possess. Empirical studies even if not clear-cut and decisive would be invaluable in apprising us of the actual nature of these patterns. Ground breaking work has been done by Break and Davidson in the closely related study of the influence of income taxation on the amount of labor which an individual will supply.[12] It can be hoped that similar empirical investigation will soon be carried on with respect to the influence of taxation on job selection.

[11] Goode recognized this possibility and classified it under "Differences in the extent to which returns are taxed." *Op. cit.*, p. 433.

[12] Break, G. F., "Income Taxes and Incentives to Work," *American Economic Review*, Sept., 1957. Davidson, Robert, "Income Taxes and Incentive; The Doctors View," *National Tax Journal*, Vol. VI —No. 3, Sept., 1953.

TAXATION OF PERSONAL INCOMES AND NET WORTH IN NORWAY

JANET A. FISHER *

THE comparative study of tax systems is attracting renewed attention. Yet relatively little material is available in English on taxation in the Scandinavian countries, and perhaps least of all on taxation in Norway. Recent publications in that country simplify the task of filling this gap.

Important differences between the Norwegian tax structure and that of this country can be attributed to a variety of causes. One may be tempted to rely heavily on explanations based on current differences in prevailing economic philosophies between the two countries. Obviously this can be misleading, and such an approach must be supplemented by knowledge of historical developments as well as of limiting conditions in the contemporary situation; most of these elements can be found in a Norwegian government publication by Leiv Vidvei entitled *Tax on Personal Income and Capital.*[1]

In summary, the following characteristics of current or quite recent Norwegian taxes stand out in contrast to tax practices in the United States. The principal tax collecting units in Norway are the central government (*stat*) and the municipality (*kommune*). Both units depend heavily on incomes and net worth as major sources of revenue. In recent years, municipalities have collected over 90 per cent of their revenues from such taxes and only 3 or 4 per cent from real estate taxes.[2] Income taxes were collected by the municipalities before they were adopted by the central government in 1892. The tax on net worth was also adopted in Scandinavian countries during the last century. In Norway, this tax is closely coordinated with taxes on personal incomes.

A third feature of Norwegian fiscal policy is the overall coordination of subventions with taxes. A general retail turnover or sales tax is combined with a system of subsidies on such consumer goods as milk, bread, and other items that bulk large in the budgets of

* The author was a Fulbright Research Scholar in Norway, 1953-54. She is indebted to the United States Educational Foundation in Norway for the opportunities it provided. In particular thanks are due the following persons who read this article in draft for their comments, suggestions and for the information they provided about recent tax changes: Petter Jakob Bjerve, Director of the Central Bureau of Statistics, whose letter included comments from members of that Bureau's Tax Office; Helge Seip, currently an editor of the Oslo newspaper *Dagbladet* and member of the Norwegian Parliament; and Leiv Vidvei, currently Deputy Chief of the Monetary Policy Division of the National Bank of Norway.

[1] *Samfunnsøkonomiske studier Nr. 2: Skatt på personleg inntekt og midel* (*Tax on Personal Income and Capital*). Statistisk sentralbyrå (Oslo, 1954). Of the four articles in this monograph, the second, entitled "Survey of Central Government Taxation of Personal Incomes for the Fiscal Years 1939/40-1951/52," and the fourth, entitled "The Central Government Taxation of Personal Capital . . . from Fiscal Year 1939/40 to Fiscal Year 1953/54" are the two principal sources for what follows here.

[2] The nature of local taxation in Norway and its relationship to taxation by the central government has been discussed more fully by Harold M. Groves in "New Sources of Light on Intergovernmental Fiscal Relations," *National Tax Journal*, Sept. 1952, Vol. V, No. 3, pp. 234-238.

low income families with many children. Similarly, family allowances granted to all families with two or more children alleviate and in some instances more than offset tax burdens for the same hard-pressed group. Norway has also experimented with separate tables of income tax rates for families of different size. The pattern of exemptions has been developed with similar considerations in mind.

TABLE I

TAX EXEMPTIONS FOR EACH TAX CLASS
FISCAL YEARS: 1921–1946, 1947, 1948–1949 AND 1950

Tax Class	1921–1946 (kroner)	1947 (kroner)	1948–1949 (kroner)	1950 (kroner)
1	900	1,000	1,100	1,100
2	1,400	1,700	1,900	2,000
3	1,800	2,400	3,000	3,200
4	2,200	3,200	4,200	4,500
5	2,600	4,100	5,500	5,900
6	3,000	5,100	6,900	7,400
7	3,400	6,200	8,400	9,000
8	3,800 [a]	7,400 [b]	10,000 [c]	10,700 [d]

Source: *Tax on Personal Income and Capital, op. cit.*, article II, p. 5.

[a] For each higher tax class, the exemption increases by 400 kroner.

[b] From tax class 8 to tax class 9, the exemption increases by 1,300 kroner, from 9 to 10 by 1,400 kroner, from 10 to 11 by 1,500 kroner, etc.

[c] From tax class 8 to tax class 9, the exemption increases by 1,700 kroner, from 9 to 10 by 1,800 kroner, from 10 to 11 by 1,900 kroner, etc.

[d] From tax class 8 to tax class 9, the exemption increases by 1,800 kroner, from 9 to 10 by 1,900 kroner, from 10 to 11 by 2,000 kroner, etc.

Just recently, Norway has moved towards and has now adopted a pay-as-you-go system of collecting taxes. There is some interest in that country in instituting income-splitting provisions for husbands and wives.

Central Government Income Taxes

In Norway there are two methods by which assessed incomes are determined. The first is the familiar one of using reports from income receivers who fill out tax forms showing total income receipts for the past year; unlike the procedure in this country, the amount of tax is then computed by the tax authorities. This method applies to all wage and salary earners and to persons living on returns from invested capital. The second method applies to those whose incomes are subject to wider fluctuations, including the self-employed in agriculture, business, forestry, and fishing. Prior to 1952, income for persons in these groups was calculated as the average of the income they received during the past three years, providing of course that they had been engaged in such activities at least that long. Beginning with 1952, businesses have been assessed on the basis of their past year's income. However, losses during the two previous years could still be taken into account.[3]

Assessed income is arrived at by making deductions which vary with occupation. For independent business men, they involve the costs of doing business. In addition a deduction can be made from the income of working wives, and another for life insurance premiums up to certain limits that have varied from time to time. Since the budget year 1921-22, all incomes below 2000 kroner have been tax-exempt.

Income exemptions are made according to the number of dependents; families are grouped into tax classes denoting the number of persons. From 1921 until 1946, these exemptions remained the same with a constant increment in size from each tax class to the next higher tax class after class 2. Since 1946 several changes have been made, all in the direction of benefiting larger families

[3] Source: Letter from Petter Jakob Bjerve, dated June 14, 1956.

to a greater extent than smaller ones. This has been done by using an increasing increment from class 2 to each succeeding higher class (Table I). Since 1948, an extra class deduction has been given for a husband or wife over 69 years of age.[4]

In the Norwegian Parliament's tax resolution applicable to 1947 incomes, a further change was introduced. The income exemption was dropped for all taxpayers in each tax class with incomes above a particular kroner limit for that class. In its place a sum varying in size with the tax class was deducted from the amount of tax to be paid. This deduction from the tax rather than from taxable income increased progression. Alterations were made in both the income limits and the tax deductions in subsequent years (See Table II). More recently, deductions from the tax have been made applicable to all taxable incomes. These deductions have also been revised subsequently, and the figures for 1954 are given in Table III.

The difference between the two methods of allocating taxes, arising from use of a deduction from the tax to be paid as opposed to an income exemption, has received surprisingly little attention in this country, especially in view of the proposal in Congress several years ago to introduce a flat $20 deduction in taxes for all individuals. The income exemption is, in effect, a tax deduction that varies in size with the size of income, whereas the deduction from the tax to be paid is a constant amount for all taxpayers with a given family size (number of aged and blind persons). This difference has been recognized by certain states, such as Wisconsin, which use the more progressive method recently adopted in Norway.

Each year the tax rates are established by a new resolution passed by the Norwegian Parliament (*Storting*). Such resolutions contain a basic table showing

TABLE II

UPPER LIMITS OF TAXABLE INCOME TO WHICH TAX DEDUCTION APPLIES IN EACH TAX CLASS, AND SIZE OF TAX DEDUCTION FOR INCOMES ABOVE SPECIFIED LIMITS
FISCAL YEARS: 1947, 1948, 1949 AND 1950

Tax Class	Upper Limit of Income (kroner)				Deduction from Tax (kroner)			
	1947	1948	1949	1950	1947	1948	1949	1950
1	9,000	10,000	6,000	3,900	210	190	120	43
2	8,300	10,000	8,000	11,000	300	300	300	351
3	7,600	10,000	10,000	12,000	390	530	530	713
4	6,800	10,000	10,000	12,000	480	740	740	1,012
5	5,900	10,000	10,000	12,000	570	980	980	1,307
6	4,900	10,000	10,000	12,000	660	1,270	1,270	1,670
7	3,800	10,000	10,000	12,000	750	1,580	1,580	2,057
8	2,600	10,000	10,000	12,000	840 [a]	1,920 [b]	1,920 [b]	2,468 [c]

Source: *Tax on Personal Income and Capital, op. cit.*, article II, p. 6.
[a] For each successive higher tax class, the deduction rises by 90 kroner.
[b] For each higher class, the deduction is the same as that on a taxable income of 10,000 kroner.
[c] For each higher tax class, the deduction is the same as that on a taxable income of 12,000 kroner.

[4] *Økonomisk Utsyn over Året 1953* (*Economic Survey 1953.*) Statistisk sentralbyrå, Oslo, 1954, p. 89.

successive taxable income increments and the rates applicable to each. The schedule of rates for the tax years 1954 to date are given in Table IV.

A special emergency surtax was introduced in 1938, increasing the marginal tax by 1 per cent of taxable income in the lowest bracket and by 17.5 per cent in the highest bracket. Similar surtaxes enacted in later years have all worked in the direction of increasing the relative burden on smaller families and on those with large incomes.

TABLE III

SIZE OF TAX DEDUCTION BY TAX CLASS
FISCAL YEAR: 1954

Tax Class	Deduction from Tax (kroner)
1	400
2	800
3	1,000
4	1,300
5	1,700
6	2,200
7	2,800
8	3,500

Source: Letter from Petter Jakob Bjerve, dated June 14, 1956.

By the time income taxes were established for 1939, the structure had become sufficiently complex and the burden so great for the wealthy that an upper limit on direct taxes was introduced. According to this new procedure, marginal taxes on assessed income could not exceed 90 per cent. Not only income taxes to the central government but also municipal income taxes, the old age insurance tax, one or two lesser taxes and, for 1940, central government taxes on net worth were included in the calculations of direct taxes relevant to determining the marginal income tax of particular taxpayers that went to the central government. The tax resolution applicable to 1949 incomes raised this upper limit on the marginal income tax to 95 per cent. The major effect of limiting marginal taxes has been to reduce the tax burden on families with relatively low incomes, but large asset holdings.

In the postwar period there have been some other special taxes on income assessed by the central government. Certain of these apply only to special population groups such as persons living in Spitzbergen and to sailors. Others are either small in magnitude, such as the tax on incomes for old age insurance, or were temporary emergency measures necessitated by World War II.

TABLE IV

BASIC TAX RATES ON PERSONAL INCOMES
FISCAL YEAR 1954 TO DATE

Taxable Income Interval (kroner)	Tax Rate (per cent)
Under 12,000	10
12,000– 20,000	15
20,000– 30,000	25
30,000– 40,000	35
40,000– 70,000	45
70,000–170,000	55
Over 170,000	65

Source: Letter from Petter Jakob Bjerve, dated June 14, 1956.

The so-called Defense Tax (*verneskatt*), introduced early in the war years and continued thereafter, is perhaps of greater importance to this discussion than the others. This tax has been levied both on assets and on income and is calculated in the following manner.

The estimated average income of Norwegian families in 1950 was 5466 kroner. Incomes ranged from an average of 1000 kroner in the bottom income decile up to 15,900 kroner for those in the top income decile. In the same years, average net direct taxes amounted to approximately 16 per cent

of income.[5]

Taxes on Net Worth

Quite a few Scandinavian institutions, especially those differing from our own, have been associated with and even been attributed to the philosophies of their contemporary governments, in which Labor Parties have been highly influential. The Norwegian tax on personal capital (or net worth) might easily share this fate. As we find in Mr. Vidvei's article on this topic, however, its history goes all the way back to the fiscal year 1896-97, before the dissolution of the union with Sweden (1905). Since then it has remained continuously in effect throughout the incumbency of governments of varying political complexions.

The major law setting forth the general rules and regulations for taxing both incomes and net worth in this century was passed by the *Storting* in 1911. Since then, such aspects as both the rates of taxation and the upper limits for non-taxable income and capital have been altered from time to time in the annual tax resolutions.

Capital subject to the tax includes such items as cash on hand, bank deposits, real property, automobiles, pleasure craft and furniture. Debts and other liabilities are deducted.[6] In effect, the tax is on net worth.

The following table from the official tax statistics gives information on the interrelationships between taxable incomes received during 1949 and taxable capital held on January 1, 1950 (Table VI). From the first part of this table it is evident that over two-thirds of all those who reported taxable income reported no taxable capital. On the other hand, only a little over 2 per cent of those paying a tax on capital had no taxable income. The next notable aspect of these figures is the low correlation between taxable incomes and taxable capital. Fortunately we find an explanation in the accompanying text.[7] The high percentage of taxpayers with taxable capital of 20,000 to 50,000 kroner is explained in two ways: first, there was a fairly large number of farmers owning their own land whose incomes were very low, and second there were some in this group whose sole source of support was their capital. Even if fully invested, more capital than this would be required to yield a taxable income. If these two groups were omitted, a higher correlation between income and net worth would be apparent. As it is we still find that of those with no taxable capital, only 0.2 per cent had taxable incomes of 20,000 kroner and over, whereas of those with

TABLE V

THE DEFENSE TAX

Tax Class	Income (kroner)	Per Cent of Regular Tax on Income and on Net Worth	Income in Excess of: (kroner)	Per Cent of Regular Tax on Income and on Net Worth
1	7,900– 8,900	12.5	8,900	25
2	10,500–11,500	12.5	11,500	25
3	12,100–13,100	12.5	13,100	25
4	13,800–14,800	12.5	14,800	25

Source: *Tax on Personal Income and Capital, op. cit.*, article II, p. 14.

[5] *Det Norske Skattesystems Virkninger på den Personlige Inntektsfordeling.* (*The Effects of the Norwegian Tax System on the Personal Income Distribution.*) Statistisk sentralbyrå, 1954, pp. 83-84.

[6] *Selvangivelse for inntektsåret 1953, Oslo.* (*Tax Declaration form for the income year 1953, Oslo.*)

[7] *Skattestatistikken for Budsjettåret 1950-51.* (*Tax Statistics.*) Statistisk sentralbyrå, 1952, p. 32.

capital of 20,000 kroner and over nearly two-thirds were in the top income bracket.

In the immediate postwar period, the complexities of the net worth tax rules reflected the problems of that period. First, there were problems in the valuation of assets following inflation, especially in view of differential price rises in the various kinds of liquid and non-liquid assets. Second, taxes on net worth were changed in accordance with general fiscal policy designed to stem inflation after Norway's liberation from the Nazis. Third, certain levies were designed to collect funds in order to pay for reconstruction as well as to confiscate the inordinate profits some had made during the Occupation.

TABLE VI

SIZE DISTRIBUTION OF NET WORTH BY INCOME AND SIZE DISTRIBUTION OF INCOME BY NET WORTH

Taxable Income Received in 1949 (kroner)	Taxable Net Worth, January 1, 1950 (kroner)								
	No Taxable Net Worth	5,000–9,000	10,000–19,000	20,000–29,000	30,000–49,000	50,000–99,000	100,000–199,000	200,000 and over	Total
No Taxable Income	....	4.0	3.7	49.3	30.1	11.5	1.2	0.2	100.0
2,000– 2,900	80.1	8.1	6.9	2.4	1.5	0.9	0.1	0.0	100.0
3,000– 3,900	75.5	9.0	8.4	3.4	2.1	1.3	0.3	0.0	100.0
4,000– 4,900	73.4	9.4	8.4	4.0	3.0	1.4	0.4	0.0	100.0
5,000– 5,900	73.3	9.9	7.8	3.7	3.1	1.7	0.5	0.0	100.0
6,000– 7,900	71.6	11.2	8.3	3.3	3.0	2.0	0.5	0.1	100.0
8,000–11,900	61.6	12.5	11.1	5.3	4.6	3.8	1.3	0.3	100.0
12,000–19,900	34.9	10.9	14.2	9.3	11.6	11.3	5.6	2.2	100.0
20,000 and over	8.6	3.2	6.6	6.5	11.8	22.1	19.8	21.4	100.0
Total	67.7	10.0	8.7	4.9	4.2	2.9	1.0	0.6	100.0
No Taxable Income	....	0.9	1.0	22.8	17.0	9.1	2.5	0.9	2.3
2,000– 2,900	17.0	11.7	11.3	6.7	5.2	4.4	1.8	0.3	14.3
3,000– 3,900	15.1	12.2	13.1	9.0	7.0	5.8	3.7	0.3	13.5
4,000– 4,900	13.4	11.6	11.9	9.7	9.0	6.3	4.1	0.3	12.4
5,000– 5,900	13.2	12.1	11.0	8.9	9.2	7.0	5.2	0.7	12.3
6,000– 7,900	23.8	25.3	21.7	14.6	16.0	15.1	11.0	4.1	22.4
8,000–11,900	14.8	20.5	20.9	17.2	18.4	21.4	19.4	9.7	16.3
12,000–19,900	2.5	5.2	7.8	8.9	13.4	18.3	23.3	19.3	4.8
20,000 and over	0.2	0.5	1.3	2.2	4.8	12.6	29.0	64.4	1.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: *Skattestatistikken for budsjettåret 1950–51* (*Tax Statistics*), (Statistisk sentralbyrå, Oslo, 1952), p. 33.

By fiscal 1950-51 there were four separate Parliamentary resolutions in effect governing the taxation of personal net worth. A demand arose for simplification, and the first steps in this direction were taken in the fiscal year 1951-52. In the following year taxes were

further simplified and combined under a single resolution.

Accompanying successive integrations of these tax rules, alterations were made in exemptions, in valuation methods, and in the general level of taxation. There was also a strengthening of enforcement measures and an increase in the penalties for violations.

Thus, while taxes on net worth rose to a new high in fiscal 1946-47 and fiscal 1947-48, the following year they were lowered to the wartime level. But in 1950-51 another heavy increase was made, probably as part of the general shift in economic policies necessitated by the stress situation that preceded and followed adverse international trade developments and the devaluation of a number of European currencies, including the Norwegian kroner.[8] Little further change occurred until two years later, when, as noted above, the various resolutions were replaced by a simplified measure. The resolution of fiscal 1952-53 also introduced a new approach to exemptions. Until that year exemptions from taxation on net worth were related to income size. The exemption had been 5000 kroner for those with taxable incomes and 20,000 kroner for those with incomes below the taxable level. The new resolution exempted all assets below 20,000 kroner and taxed all asset holders above that level, without respect to income size. In effect 190,000 persons, or more than one-half of the 350,000 persons who had previously paid a tax on net worth, were exempted. At the same time, most of the remaining 160,000 taxpayers became subject to higher rates.

The resolution for fiscal 1953-54 embodied yet another change in the approach to exemptions, this time following the income tax practice of recognizing differences in family size. The new capital tax regulation, however, only distinguished between the class 1 group with no dependents and all other tax classes. The former group was exempted on the first 15,000 kroner, and all others on the first 25,000 kroner of net worth. This further reduced the number liable to such taxation, to about 150,000. At the same time rates were altered; they were raised for those in some brackets and decreased for those in others.

Another aspect of taxation, referred to earlier, was the upper limit that the central government established for marginal taxes on income and capital to be paid by any one taxpayer to both the municipalities and the central government. In the immediate prewar period this limit was 75 per cent of the highest bracket of assessed income. This limit remained in effect through 1949-50, although certain special taxes had to be omitted from the calculation during part of this period. In the next year, the limit was raised to 80 per cent and still later to 90 percent of assessed income. By 1953-54, however, the limit had been reduced to 85 per cent.

The following table shows what happened to tax rates on net worth during a part of the postwar period and also gives a basis for comparing current rates with those of the last prewar years. Since tax computations were highly complex, with a variety of rates in effect in 1946, 1947 and 1948, these years have been left out of Table VII; however,

[8] In 1948, before devaluation, the rate of exchange was 4.97 kroner to the dollar. In 1950, after devaluation, the rate was 7.15 kroner to the dollar. It has not been changed since then. (*Statistik Årbok for Norge, Statistical Yearbook for Norway,* Statistik sentralbyrå, 1954, p. 1959.)

they can be found in the source noted there.

Three major changes between 1939 and 1953 are clear, in addition to the differentiation of tax class 1 and other taxpayers in the latter year. First, there were higher exemptions in the later year for all except persons with incomes below the taxable level. Second, for all brackets up to the top three, tax rates were higher in 1953 than in 1939. Third, in the three top brackets the tax rates on capital were lower in 1953 than in 1939.

A study of the comparative progressivity of taxes in 1939 and 1953 indicates that taxes on capital were more progressive in 1953 than in 1939 up to holdings of about 115,000 kroner.[9] For larger assets the progression was somewhat less at the later date. The greater progression below 115,000 kroner in 1953 may be attributed in part to the

TABLE VII

REGULAR TAX RATES OF THE CENTRAL GOVERNMENT ON NET WORTH APPLICABLE TO TAXABLE NET WORTH AS OF JANUARY 1, 1939, 1950, 1951, 1952 AND 1953

Net Worth (kroner)	Tax Rates on Net Worth (Tenths of a per cent)					
	1939	1950	1951	1952	1953 Tax Class	
					1	2 and over
5,000	0.30	0.66	0.66	....	....	....
10,000	0.30	0.66	0.66	....	....	....
15,000	0.37	0.81	0.81	....	....	....
20,000	0.40	2.20	2.20	2.00	0.60	....
25,000	0.42	2.31	2.31	2.20	1.00	....
30,000	0.43	2.38	2.38	2.33	1.23	0.40
40,000	0.45	2.48	2.48	2.50	1.88	0.93
50,000	0.46	2.53	2.53	2.60	2.50	1.50
75,000	0.64	3.52	3.52	3.33	3.67	2.68
100,000	0.73	4.02	4.02	4.00	4.62	3.87
125,000	0.88	4.86	4.86	5.00	5.40	4.60
150,000	1.59	6.09	6.34	5.87	6.17	5.50
175,000	2.16	7.37	7.79	6.74	6.71	6.14
200,000	2.59	8.32	8.88	7.70	7.13	6.63
250,000	3.47	10.41	10.96	9.52	8.05	7.55
300,000	4.06	11.80	12.34	10.93	8.79	8.37
400,000	5.15	14.47	14.75	13.20	10.25	9.88
500,000	5.98	16.28	16.20	14.56	11.20	10.90
600,000	6.61	17.94	17.17	15.47	12.19	11.90
700,000	7.20	19.27	17.86	16.11	12.95	12.70
800,000	7.64	20.27	18.38	16.60	13.52	13.30
1,000,000	8.43	21.86	19.10	17.28	14.31	14.14
2,000,000	11.28	27.01	20.00	18.64	15.91	15.82
5,000,000	15.09	32.42	21.42	19.46	16.86	16.83
10,000,000	17.97	36.01	22.26	19.73	17.18	17.16
20,000,000	21.55	40.18	22.68	19.86	17.34	17.33
30,000,000	24.24	43.24	22.82	19.91	17.39	17.39

Source: *Tax on Personal Income and Capital, op. cit.*, article IV, p. 21.

[9] L. Vidvei, *op. cit.*, article IV, pp. 22-24.

change in exemptions. Also the percentage increase in rates over the 1939 levels rose to about 115,000 kroner, and from that point upward the percentage increase diminished, so that in the top brackets the rates themselves were smaller in 1953 than in 1939. Moreover, it may be noted that even though taxes on net worth under 16,000 kroner in class 1 and under 26,000 kroner in class 2 and over were not levied in 1953 and assets over about 7,000,000 kroner were taxed less, still the major part of all holdings were taxed at higher rates in 1953 than they were immediately before World War II.

All of the above conclusions are based on a comparison in terms of current kroner figures. But as noted earlier, a substantial price rise took place during this period, and therefore the question arises of how best to adjust the prewar figures in order to arrive at a comparison of tax rates on a constant value basis.

TABLE VIII

CENTRAL GOVERNMENT TAXES ON NET WORTH AS OF JANUARY 1, 1939 AND JANUARY 1, 1953, ADJUSTED FOR CHANGES IN KRONER VALUE

Net Worth (kroner)	Tax Rates on Net Worth (Tenths of a per cent)			
	1953		1939	
	Tax Class 1	Tax Classes 2 and over	Adjusted for Changes in the Cost of Living	Adjusted for Price Changes as Computed from National Income Data
5,000	....	....	....	....
10,000	....	....	0.30	....
15,000	....	....	0.30	0.30
20,000	0.60	....	0.30	0.30
25,000	1.00	....	0.35	0.30
30,000	1.23	0.40	0.37	0.33
40,000	1.88	0.93	0.40	0.37
50,000	2.50	1.50	0.42	0.39
75,000	3.67	2.67	0.45	0.43
100,000	4.62	3.87	0.46	0.45
125,000	5.40	4.60	0.56	0.46
150,000	6.17	5.50	0.63	0.52
175,000	6.71	6.14	0.68	0.59
200,000	7.13	6.63	0.72	0.64
250,000	8.05	7.55	0.86	0.71
300,000	8.79	8.37	1.46	0.81
400,000	10.25	9.88	2.48	1.56
500,000	11.20	10.90	3.34	2.37
600,000	12.19	11.90	3.95	3.06
700,000	12.95	12.70	4.54	3.62
800,000	13.52	13.30	5.02	4.04
1,000,000	14.31	14.14	5.85	4.90
1,500,000	15.38	15.26	7.30	6.37
2,000,000	15.91	15.82	8.31	7.40
2,500,000	16.23	16.16	9.20	8.19
5,000,000	16.86	16.83	12.19	11.01
10,000,000	17.18	17.16	14.95	13.95
20,000,000	17.34	17.33	17.82	16.67
30,000,000	17.39	17.39	19.82	18.59

Source: *Tax on Personal Income and Capital, op. cit.*, article IV, p. 23.

If asset holdings are considered in terms of their command over current consumption goods, then it can be argued that cost of living index numbers should be used. If asset holdings are looked at in terms of their purchasing power over other assets, then perhaps an index derived from national income data would be more appropriate. Both sets of figures have been worked out and are presented in Table VIII. The cost of living index adjustment more than doubled the asset figures for 1939, while the national accounts index involved an almost threefold increase.

Again we find the effect of altered exemptions in the lower brackets, and still the tax rates in 1953 are well above those for 1939 for most of the asset classes shown. Only at the level of 20,000,000 kroner in the case of figures adjusted by the cost of living index, and at the 30,000,000 kroner level in the other case, are 1939 rates higher than those of 1953. In other words, rates for very large holdings had been reduced slightly by 1953 even on a comparable kroner basis.

* * *

This has been a rather selective description of Norwegian taxes on personal capital. Although similar taxes on assets have long been an integral part of government levies in Scandinavian countries, they have generally been looked upon with suspicion in the United States and Great Britain. As I have tried to emphasize, the difference in viewpoint should not be interpreted as a corollary of current differences in general economic philosophy. Such taxes have been levied in Norway, Denmark, and Sweden during the incumbency of Conservative and Liberal as well as Labor or Social-Democratic governments.

Beyond the redistributive effects of a net worth tax, discussed in Mr. Vidveis' article, we would be extremely interested to learn how the tax has affected the propensity to save. How do Norwegians allocate their current incomes in view of the fact that what remains at the end of a given year will be subject to an "additional" tax? In what income and net worth bracket does such taxation encourage increased consumption? Perhaps we shall begin to get some answers from budget studies of families in the higher income and net worth classes, under way or just recently completed.

A clear indication of a recognized relation between net worth taxes and consumer savings was given within recent years. During 1955 the Norwegian government instituted a number of measures to stem inflationary pressures, some of them designed to reduce the high rate of capital investment, others designed to encourage savings. Among the latter was the exemption of savings deposits up to 5,000 kroner from taxes on net worth.[10]

[10] "Monetary Policy in Scandinavia," *Monthly Review of Credit and Business Conditions*, Federal Reserve Bank of New York, Vol. 37, August, 1955, p. 98.

BOOK NOTES

Industrial Tax-Exemption in Puerto Rico. By MILTON C. TAYLOR. The University of Wisconsin Press, Madison, 1957. Pp. 172. $3.50.

In a broad sense this study is concerned with the problem of raising the standard of living of the underdeveloped areas of the world. Industrial tax-exemption has been adopted by an increasing number of countries as the most promising means of luring much needed capital and managerial talent, and therefore this study of Puerto Rico's experience with this form of economic subsidy is a timely addition to the literature on economic development.

The tax exemption of new manufacturing or business establishments has long been criticized in public finance writings, but in Puerto Rico it has been given most of the credit for the dramatic industrial boom which has taken place there during the postwar period. In this book Professor Taylor has attempted to determine whether tax exemption has in fact, been a desirable instrument of public policy for Puerto Rico, and whether after allowance for the unique aspects of Puerto Rico's economic relationships with the United States, it can be inferred that tax subsidies would be a desirable means for promoting the industrialization of other underdeveloped areas.

Financing Highways: A Symposium. Tax Institute, Inc. Princeton, New Jersey, 1957. Pp. 218. $5.00.

In its most recent symposium volume the Tax Institute has directed attention to the Federal Aid Highway Act of 1956, the problems it promises to solve and the ones it will not solve.

The volume, containing papers from 16 contributors, is addressed to the following major topics: 1) the role of an adequate highway system in the national economy; 2) reapportionment of fiscal responsibility and the impact of the new federal program on state and local governments; 3) the role of highway user revenues in financing the program; 4) problems arising out of the use of certain designated taxes; and 5) problems of expediting the highway program.

NTA NOTES

Notes from the President's Desk

The January meeting of the Executive Committee was held at Harrisburg, Pennsylvania on January 23 and 24. Selection of Harrisburg as a place for the meeting provided the members with an opportunity to visit the Headquarters Office of the Association. All of us were favorably impressed by the location, equipment, and other facilities of the offices. The office is located in the Payne-Shoemaker Building and all members and others interested in the Association are invited to drop in when the opportunity arises.

One of the major items on the agenda for the January meeting is always the discussion and adoption of the budget for the ensuing year. Each category of income and expenditure is carefully analyzed to the end that total expenditures may be limited to conservative estimates of income and that the over-all resources of the Association may be utilized in the best possible manner. It is gratifying to report that the finances of the Association are in good order. Messrs. W. Donald Jordan and Walter L. Kidd of New York and M. Clyde Sheaffer of Pennsylvania have been appointed to the Committee on Auditing and will audit the accounts of the Executive Director and the Treasurer.

Mr. Lewis H. Kimmel, Chairman of the Program Committee for the 1958 Conference, reported on the plans and progress of his committee. Mr. Kimmel's report indicated that an interesting and well diversified program is being planned for the conference which will be held at the new Sheraton Hotel in Philadelphia on October 27-31, 1958. Mr. Theodore K. Warner, Chairman of the Local Arrangements Committee for the 1958 Conference attended the Friday morning session of the meeting and reported on the work of his committee. Plans for local arrangements are moving along well, and we can reasonably expect that this feature of the 1958 Conference will fully attain the high standards of recent conferences.

Progress reports of special study committees were received and discussed at the meeting. Mr. A. G. Buehler, Chairman of the Committee on Intergovernmental Fiscal Relations held a meeting of his committee in Washington, D. C. on February 18. At the suggestion of Mr. Buehler, the names of Messrs. Carter T. Louthan and M. M. Kassell of New York have been added to this committee.

Mr. Roger A. Freeman, Chairman of the Committee on Financing Public Education, has scheduled a meeting of the committee in Chicago on March 28 and 29. Miss Selma Mushkin of Washington, D. C. and Mr. Raymond F. Conkling of New York have been added to this committee. Also added, was Mr. C. Z. Moore of Missouri to pinch hit for Mr. Harry C. Williamson who has been seriously ill. Mr. Moore will have the advice and cooperation of his colleague, immediate Past President J. L. Reuther, under whose administration the committee was established. Mr. Frank Cassidy of New York has agreed to serve on the Committee on Interstate Allocation of Income in place of Mr. Leo Mattersdorf of New York who asked to be relieved from this committee when he was elected Secretary of the Association. The Committee on State Equalization of Local Property Tax Assessments, under the chairmanship of Mr. William G. Murray of Iowa, has prepared a tentative draft of a report and expects to submit a final report by next July.

The drive for new members will continue to be a major activity of the Association in 1958. Although the finances of the Association are in excellent condition, an increase in the membership will enable the organization to expand research activities and other services. Mr. Stanley J. Bowers of Ohio, who is Vice President of the Association, is Chairman of the Membership Committee this year. The remaining members of the committee are the other officers and members of the Executive Committee. Each member of the Association is requested to be on the alert for prospective members and to invite such persons to join the organization. The Executive Director will be glad to provide you with application blanks and information leaflets.

Messrs. Wm. D. Ross of Louisiana, J. P. Stapchinkas, of Michigan, and L. C. Dorweiler, Jr. of Minnesota have been appointed to the Editorial Advisory Board of the National Tax Journal to replace Messrs. Paul Alyea of Alabama, Alan Gornick of Michigan, and Carl P. Herbert of Minnesota whose terms have expired. Mr. Lynn A. Stiles of Illinois was appointed to serve for one year in place of Mr. Leo Mattersdorf who resigned. In selecting persons for the Editorial Advisory Board, consideration is given to professional interests, qualifications, and geographical location.

The April meeting of the Executive Committee will be held at the Sheraton-Blackstone Hotel in Chicago on Thursday and Friday, April 24 and 25. The meeting will convene at 9:30 a.m. on April 24.

H. KENNETH ALLEN, *President*

* * * * *

Philadephia Conference

President Allen has referred to the work of the conference chairmen. You should make your plans now to attend this meeting. There is no other American city which offers so much of historic and patriotic interest. Among the shrines located in the city is Independence Hall, the birthplace of American freedom. Betsy Ross House and Old Swede Church are nearby. Famous City Hall with William Penn atop is quite near the Sheraton Hotel, which will house those in attendance. The hotel leaves nothing to be desired. Informative letters enclosing room reservation cards will be mailed to the members next summer.

Chairman Lewis Kimmel of the Program Committee announces a meeting of his group at the Brookings Institution, 722 Jackson, N. W. Washington, D. C. on March 31 at 9:30 a.m. Chairmen Kimmel and Warner and your Executive Director intend to get together at an early date in Philadelphia to correlate their respective functions in respect to the coming NTA Conference.

Committee on Financing Public Education

Chairman Roger Freeman has announced that the meeting dates of his committee have been moved up from Friday and Saturday, March 28 and 29 to Thursday and Friday, March 27 and 28 to meet the convenience of the members. The meeting will be held in Room 633 of the State Office Building, 160 N. LaSalle Street, Chicago, beginning 9:30 a.m. March 27. The place of meeting is in the Illinois Department of Revenue, and is the office of Mr. Eugene L. Maynard, a member of the committee.

Mr. Charles Z. Moore, who will assume the duties of Mr. Harry C. Williamson on this important committee, had a distinguished record in the United States Air Force in World War II. He joined the Tax Department of the Southwestern Bell Telephone Company in Texas on January 1, 1943. In 1950 he came to the St. Louis office and since 1952 has been the reliable assistant of Mr. J. L. Reuther, General Tax Supervisor of the Southwestern Bell Telephone Company. Past President Reuther's many valuable contacts will be available to the committee through Mr. Moore, who is a prominent civic leader in the St. Louis area.

This committee is seriously attacking one of the great problems of the day and the future. Chairman Freeman says, "The provision of financial support for public education may well, in terms of magnitude, be the largest and most difficult fiscal problem which the American people face in the years immediately ahead."

Committee on Intergovernmental Fiscal Relations

Chairman Alfred G. Buehler held a meeting of this committee at the Hotel Statler in Washington, D. C. on February 18. The attendance was good, despite the severe storm. Federal officials, including Messrs. Dan Throop Smith of the Treasury Department, John H. Stambaugh, Special Consultant to the President, Thomas Graves of the Budget Bureau and Wayne Warrington of the White House staff, met with the committee. Chairman Buehler will shortly announce

a subcommittee to work with the Joint Federal-State Action Committee along the lines of the committee's explorations. He plans another meeting of the whole committee in the spring.

New Jersey Report—Committee on State Tax Policy

A copy of the Ninth Report of this committee, chairmaned by Mr. John F. Sly, was mailed to your Executive Director by State Treasurer Aaron K. Neeld. There is a reference in the report to the 1953 report of the NTA Committee on Personal Property Taxation.

1959 Conference—Houston, Texas

Those members who are planning far in advance should keep in mind that the 1959 Conference of the National Tax Association will be held in Houston, Texas, October 25-29. The headquarters will be in the Rice Hotel. Executive Committeeman Philip S. Robira, himself a resident of Houston, promises a real surprise. Those members who attended the 1951 Conference in Dallas, Texas, will recall the many interesting phases of that gathering as well as the cordial hospitality of our southwestern friends.

Membership

Vice President Stanley J. Bowers, Membership Chairman, has launched his campaign for 1958 by mailing out cards to the officers and members of the Executive Committee on which they are requested to fill in the names of the prospects whom they will sponsor. The cards are to be returned to the chairman for follow-up. Similar cards will be mailed to other N. T. A. members in the near future. This activity is sure to bring some fine results.

Extra effort is necessary in membership solicitation right now. It is not easily understood but the fact remains that some corporate and individual members consider NTA membership as the kind of affiliation to drop during a so-called recession. The truth is that the contacts and the literature which are incidental to NTA membership are becoming increasingly more beneficial. In the above notes references are made to the activities of just two of our important study committees which are working on vital subjects affecting taxes at all levels of government, namely the Committees on Financing Public Education and Intergovernmental Fiscal Relations. Therefore, the continuing financial contribution to this important work should be fully considered before any membership is withdrawn. This is the time to realize the advantages of belonging to N.T.A.

Again there is a detachable membership application blank on the following page. Personal contact by an enthusiastic N.T.A. member will get another member. Probably some friendly prospect will join readily if only given a cordial personal invitation.

PLEASE USE THIS BLANK.

WALTER J. KRESS, *Executive Director*

APPLICATION FOR MEMBERSHIP

National Tax Association
905 Payne-Shoemaker Building
Harrisburg, Pennsylvania

Date .....

I agree with the objectives of the National Tax Association and authorize my enrollment as a member. As such, I am to receive the quarterly NATIONAL TAX JOURNAL and the PROCEEDINGS OF THE ANNUAL CONFERENCE. I desire my membership made effective with the quarter beginning:

Jan., 19.... ☐
April, 19.... ☐
July, 19.... ☐
Oct., 19.... ☐

and enclose my check for $..... in payment of dues as

- ☐ A student in a recognized institution of higher learning .....$ 10.00
- ☐ An employee of a government or of a school, receiving more than half of my income from such employment .....$ 10.00
- ☐ An individual not coming within the preceding categories .....$ 25.00
- ☐ A corporation .....$ 100.00
- ☐ One who wishes to contribute more liberally to the work of the Association .....Up to $1,000.00

Name (Please print) .....

Title or Profession .....

Business Affiliation .....

Address .....

Attach check payable to NATIONAL TAX ASSOCIATION and mail to:
Walter J. Kress, Executive Director, National Tax Association, 905 Payne-Shoemaker Bldg., Harrisburg, Pa.

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Harvard Graduate School of Business Admin., Boston

NATIONAL TAX ASSOCIATION

Organized 1907—Incorporated 1930

OBJECT. The National Tax Association is a non-political, non-sectarian, and non-profit-making educational organization. Its object, as stated in its certificate of incorporation, is to educate and benefit its members and others by promoting the scientific study of taxation and public finance; by encouraging research; by collecting, preserving, and diffusing scientific information; by organizing conferences; by appointing committees for the investigation of special problems; by formulating and announcing, through the deliberately expressed opinion of its conferences, the best informed thought and ripest administrative experience available; and by promoting better understanding of the common interests of national, state, and local governments in the United States and elsewhere, in matters of taxation and public finance and interstate and international comity in taxation.

MEMBERSHIPS. The Association welcomes to its membership, for mutual discussion and deliberation, all who may be interested in taxation and public finance generally. Annual dues are: memberships for students in recognized institutions of higher learning, $10; memberships for government agencies, schools, and persons receiving more than one-half of their income from employment by such agencies or schools, $10; memberships for other individuals and unincorporated entities, $25; corporate memberships, $100; persons wishing to contribute more liberally to the support of the Association, $100 to $1000.

PUBLICATIONS. The NATIONAL TAX JOURNAL is published quarterly in March, June, September, and December. PROCEEDINGS of the annual conferences on taxation which are sponsored by the Association are published soon after the meetings. The JOURNAL and the PROCEEDINGS are sent to members without charge. To non-members the price of the JOURNAL is $5.00 per year, single numbers, $1.50. The prices of the PROCEEDINGS vary; that of the 1956 volume is $10.50.

Applications for membership, orders for publications, and general inquiries should be addressed to Walter J. Kress, Executive Director, National Tax Association, 905 Payne-Shoemaker Building, Harrisburg, Pennsylvania.

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